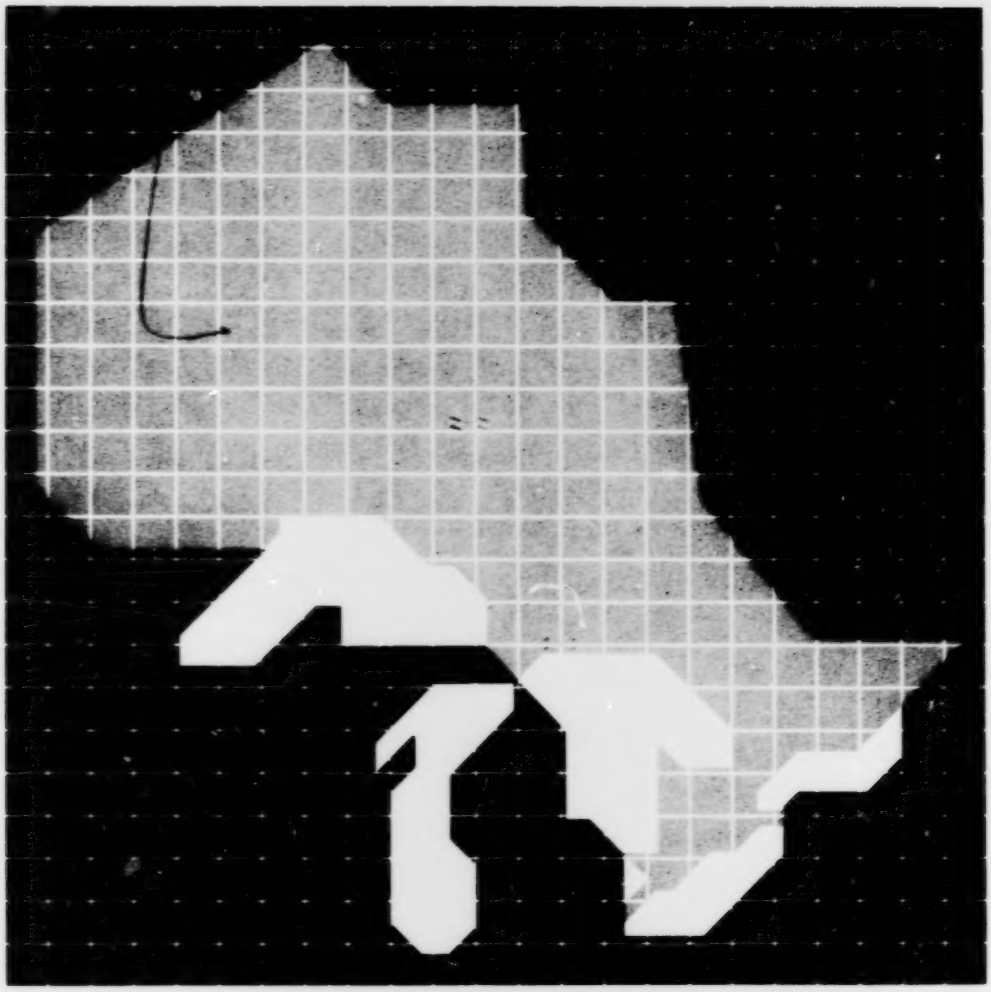
Blueprint for Waste Management in Ontario



Ontario

Ministry of the Environment

Hon. Keith C. Norton, Q.C.,
Minister

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Deputy Minister

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STRIVING FOR A CLEANER, SAFER ENVIRONMENT

ONTARIO'S BLUEPRINT FOR WASTE MANAGEMENT IN THE 1980s

MINISTRY OF THE ENVIRONMENT

JUNE, 1983

The goal of the Ontario Ministry of the Environment:

> To achieve and maintain a quality of the environment, including air, water and land, that will protect human health and the ecosystem and will contribute to the well-being of the people of Ontario.

Ce rapport sera publié sous peu en français. On peut en obtenir un exemplaire en s'addressant à n'importe quel bureau du ministère de l'Environnement.

FOREWORD

Our environment is our home. It is the place where we live, work, and play. Its condition determines the quality of our life, and guides our personal and social development.

The environment is both our inheritance and our bequest to our children. The quality of the environment that we bestow shows our concern for their future.

Protecting our environment is a responsibility that we all share. We can take some pride in Ontario in our success in minimizing the impact of pollution in our water and air, and in our land.

Waste management is the challenge of the 1980s. We have laid a strong foundation on which we now can build a comprehensive and effective program for total waste management which includes reduction, reuse, recycling and recovery, as well as treatment, safe disposal and a gua-antee of perpetual care.

To be successful, any waste management program must have the co-operation, support and participation of municipal governments, industry, and most important, the general public. Indeed, the very formulation of a master plan for waste management must take into account the views and concerns of as many people in Ontario as possible.

On November 22, 1982, I announced my intention to develop an effective comprehensive plan for the handling of waste in Ontario and to prepare and introduce a clear, understandable, pointed, and challenging document to outline the problem and point to solutions.

This is that document -- **A Blueprint for Waste Management.** It is a blueprint, but it is also an invitation. Waste management is everyone's business and everyone's responsibility. Only when the public has had the fullest opportunity to comment, to criticize, and to contribute, will we complete the process of drafting policies, regulations and legislation.

Therefore, I am pleased to invite the active involvement of the public, municipalities, other agencies, and private industries in developing a final Blueprint for an action program.

I have instructed staff of the Ministry to ensure this participation and sharing of views by holding a series of public meetings in convenient locations across Ontario.

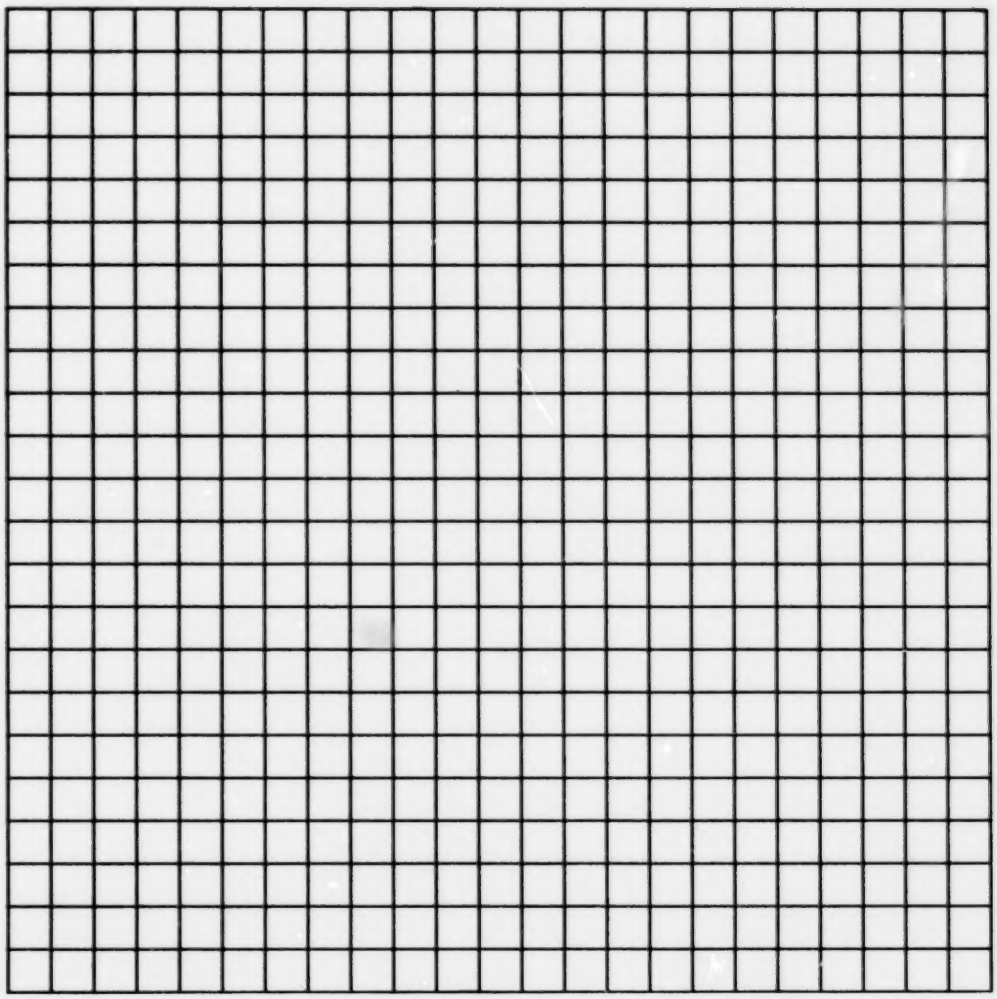
May I count on your assistance in transforming the Blueprint into an effective action program for total waste management in our Province?

K.C. Norton, Q.C.
Minister of the Environment
June 1983

TABLE OF CONTENTS

		PAGE
1.	FOREWORD	ii
2.	WASTE MANAGEMENT: WE ALL HAVE A ROLE	1
3.	CLASSIFYING WASTES	6
4.	REDUCTION, REUSE, RECYCLING AND RECOVERY	12
5.	AUTHORITY AND RESPONSIBILITY	25
6.	AREA WASTE MANAGEMENT PLANNING	36
7.	HEARINGS, APPROVALS AND APPEALS	39
8.	PERPETUAL CARE: PROTECTION FOR THE FUTURE	45
9.	TRANSITIONAL REQUIREMENTS	51
10.	THE ROAD TO EFFECTIVE WASTE MANAGEMENT	54
11.	ADDENDUM: BACKGROUND TO WASTE MANAGEMENT	58
12.	SCHEDULE OF APPENDICES	71

Waste Management:
We All Have a Role



WASTE MANAGEMENT: WE ALL HAVE A ROLE

Waste management is a communal problem. Each of the 8.5 million people of Ontario generates an average of 4.5 pounds of garbage every day, or a total of more than 7 million tons a year. In addition, hauled liquid waste amounts to 60 million gallons a year, of which 6 to 9 million gallons is toxic or hazardous. With population growth and other factors, these totals grow inexorably each year, so the problem becomes ever more urgent.

An Approach To Waste Management

In November, 1982, the Minister of the Environment set out four principles to the Ontario Legislature as the framework for a comprehensive review of all present waste management policies, practices and controls:

- † As many recoverable and usable material and energy resources as possible must be reclaimed from the garbage we produce.

- † Those who are responsible for producing, handling and disposing of wastes must be accountable for the way they execute their responsibilities.

- † As responsible parties, we must be informed on the issues and take part in the decisions which must be made to resolve them.

- † Our disposal practices must ensure that no waste ever becomes a threat to either our environment or our well being.

Since the passage of the Waste Management Act in 1970, there have been many changes affecting waste management practices in Ontario. There have been at the same time advances in technology and an accumulation of information and experience.

It is now time to formulate new policies and controls, including legislation, which will take into account the developments of the past

decade, and which will more clearly delineate authority and responsibility for waste management.

The goal is an effective, comprehensive and understandable waste management program for Ontario. This Blueprint has been prepared as a suggested approach to the creation of a logical, organized and effective overall waste management program for Ontario, consistent with the objectives listed in full in the addendum on Page 58.

In brief, the objectives are:

- † active public participation;
- † consistent, long-term planning, co-ordinated with overall land use planning;
- † a minimum use of landfill;
- † perpetual care of all waste sites;
- † firm control through legislation, regulation and guidelines, consistent with maximum flexibility and accountability;
- † research and optimum use of up-to-the-minute world-wide scientific knowledge; and,
- † processes that ensure that waste, once disposed, does not damage the environment or put the public at risk through human interference or natural processes.

Consistent with these objectives, the Ministry of the Environment wants to effect major changes in the way the people of Ontario generate and manage waste. The process of change is one in which every element of society must participate. No one of us can do it alone -- we all have a role.

This document is intended to stimulate discussion on the future of waste management in Ontario. It sets out a series of proposals and options focusing attention on the major waste management processes from generation through recycling to ultimate safe disposition.

For a broad perspective on the waste management process and the waste cycle, the reader is referred to Chapter 11, Background to Waste Management.

Role of the Ministry

At present, the Ministry of the Environment performs two major functions in the field of waste management:

a) a regulatory role concerned with control and enforcement;

b) a managerial role, including research and development, the encouragement of reduction, reuse, recycling and recovery, and the provision of funding to encourage long-term planning.

The Ministry intends, as outlined in this Blueprint, to increase the effectiveness of its regulatory function, and to expand its managerial role, particularly in the areas of technology assessment and the inventory and technical evaluation of closed and active disposal sites.

Role of the Municipalities

Municipal authorities must assume greater responsibility with relation to waste management planning and its co-ordination with other municipal utilities and land-use activities, the control of development in relation to the availability of waste disposal facilities, and cost accounting practices which reveal the true costs of their waste management activities.

Each municipality should have its own comprehensive municipal waste management master plan, co-ordinated with other municipal planning activities, and in particular land-use planning. A long-term master plan developed with the co-operation of the Province, industry and the public is an essential first step in the selection of disposal sites and facilities, after examining the full range of waste management options available.

Role of Industry

More than any other segment of our society in Ontario, the activities of private industry have focused public attention on the dangers of imperfect waste management practices. This is in part because certain industries must deal with hazardous wastes.

Corporate enterprise is faced with - and must confront - the sometimes conflicting considerations of profit maximization and the public welfare.

To reconcile the two, industry must balance its private concerns with the costs and benefits to the public of its waste management practices. Moreover, as a generator of waste, industry must be held accountable for the handling and treatment and/or disposal of that waste.

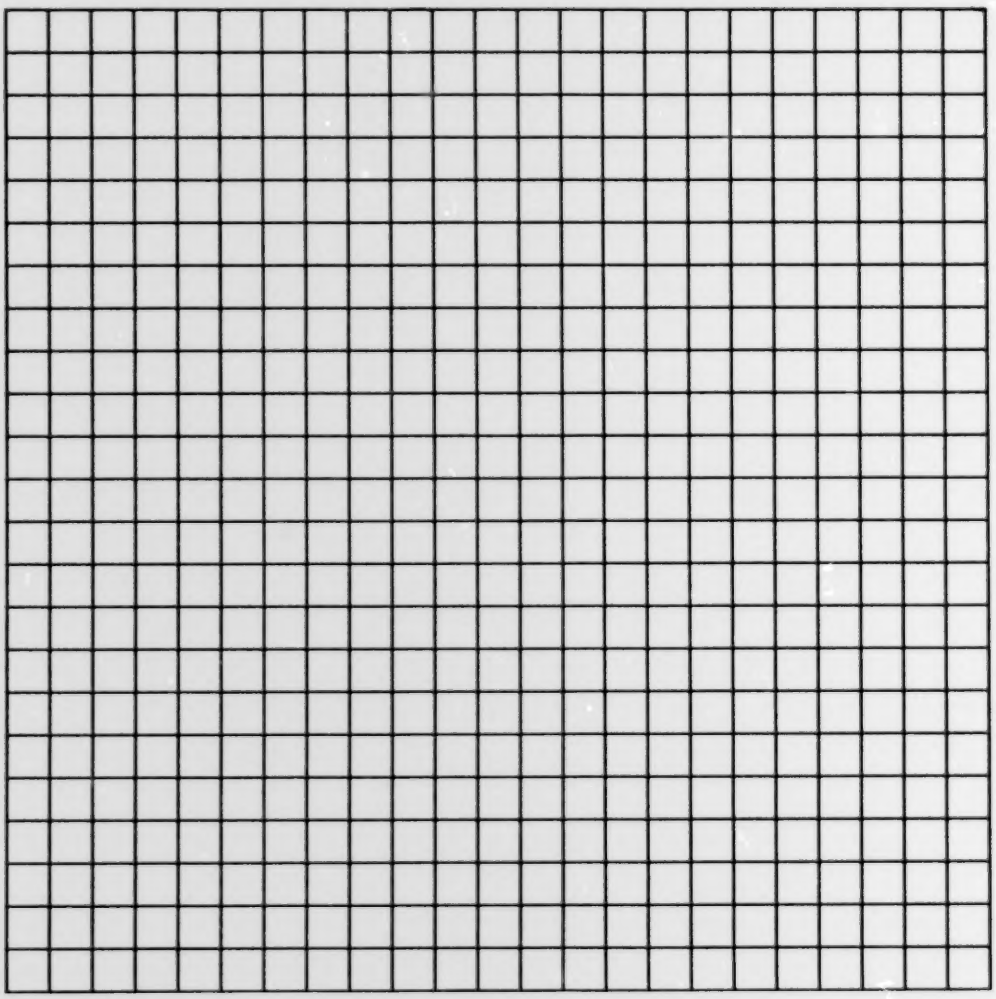
For these reasons, the Ministry of the Environment is proposing new regulations for industry under the three distinct headings of generators, carriers and receivers.

Role of the Public

All of the residents of Ontario are affected by waste management practices. It follows that the public should be involved on a continuing basis through all stages of development of waste management programs and projects. It is essential that the public be informed, and one means of accomplishing that objective is for people to be aware of, and to participate in, the deliberations that lead to the drafting of legislation, regulations and policies governing waste management in Ontario.

Individuals also carry an important responsibility. As generators of waste, they must be aware of the benefits that flow from participating in the reuse, the reduction, the recycling and the recovery of wastes. The public must also recognize that no matter how successful programs utilizing reduction, reuse, recycling and recovery may be, landfill sites will still be required for disposal.

Classifying Wastes



CLASSIFYING WASTES

All wastes, including household garbage, are of environmental concern if not properly managed.

At present, wastes are classified under Regulation 309 of the Environmental Protection Act. The classifications in Regulation 309 lack clarity, and therefore present problems for those who generate, handle and dispose of waste.

Since all wastes are of environmental concern to some degree if not properly managed, a new classification system is proposed. The system has been designed to provide a realistic separation of wastes in relation to the risks associated with them, which in turn makes it possible to develop more logical systems in the approval and enforcement sectors.

The Ministry of the Environment suggests that waste be defined within three categories - special waste, controlled waste, and municipal waste.

Special Waste

This category would include liquid and solid hazardous wastes, and most liquid industrial wastes. Special waste would be systematically classified according to such characteristics as ignitability, corrosivity, reactivity, pathogenicity, and toxicity. Appendix 4 "Interim Guidelines for Introduction of the Hazardous Waste Definition" provides detailed information on this classification. A list of approximately 400 chemicals and waste streams which may appear as special waste has been prepared.

The proposed special waste category would provide exemptions for small quantities of hazardous waste such as those normally generated by households, small industrial corporations, laboratories and schools (small quantity exemptions also are listed in Appendix 4). Guidelines to address the proper packaging, handling and, if necessary, treatment of these small quantities are being developed by the Ministry of the Environment.

Controlled Waste

Controlled waste requires greater care in handling and disposal than municipal waste, but can be landfilled, usually by co-disposal with municipal waste.

This category includes site-specific solid waste, and certain non-hazardous liquid wastes (such as food processing waste), which do not fall into the special waste category. The site-specific wastes would be further defined according to a waste listing and a leachate extraction procedure to compare leachate quality with standards based on drinking water quality criteria. This would be followed by a site-specific review to ensure that conditions at the chosen landfill site are acceptable. Using this approach, all potential leachate migration would be controlled to an acceptable level in relation to drinking water objectives.

Appendix 4 also provides detailed information on the categorization of controlled waste.

Municipal Waste

This category includes waste from residential, commercial, institutional, and industrial sources composed of materials similar to normal household waste.

However, it must be recognized that even normal household waste may include quantities of hazardous materials, such as household solvents, cleaners, and insecticides. The Ministry of the Environment is examining the possibility of a joint program with municipalities for more careful handling of household-generated hazardous wastes. Householders could separate such materials from the rest of their garbage for separate collection and disposal in a safe, secure fashion.

Materials of Note

While the classification system deals with the three major categories of waste, certain other materials including recyclable wastes, inert liquids and backfill material should be noted.

Recyclable Waste

Changes are proposed to Regulation 309 (See Appendix 6) which would address wastes that are being recycled. It is the Ministry's intention to promote the legitimate and beneficial reuse/recycling of material to reduce the volumes of waste requiring disposal by providing exemptions for this material from legislative requirements. At the same time, adequate controls would be maintained to guard against misuse of the provisions.

The proposed approach would exempt from waste management approvals and waybill requirements all wastes that are transported directly for reuse in a commercial or industrial process.

Certain waste materials not falling within the special or controlled waste categories might also be exempt even though an intermediate stage of transfer, processing or treatment is required. In addition, the facilities at which such operations are carried out might be exempted if their function is primarily material handling and processing rather than waste management.

Recyclable materials also would include wastes that are used for dust suppression. These would be restricted to certain wastes which, it has been demonstrated, have been used for this purpose without risk to the environment.

Wastes that are to be used as a fuel in a combustion unit used principally for functions other than waste management would be exempt from Part V approvals. Waybills would be required for special and controlled waste to ensure that only those approved for combustion under Section 8 of the Environmental Protection Act would be received.

Inert Liquid Waste

It is proposed that inert liquid wastes should be defined and exempted from the general class of "liquid industrial waste" where it can be established that these wastes pose minimal environmental hazard. These wastes are suitable for disposal at approved landfill sites in accordance with good waste management practices, recognizing specific site operating conditions and the volumes of wastes for disposal.

An example of such wastes is marble slurries from the manufacture of tombstones.

Waste for Backfill Material

Material excavated from a construction site could be put back into the site as backfill without any necessity of approvals except in a few cases where the material is known to be, or found to be, badly contaminated. These wastes should be taken to an approved waste disposal site for the protection of those using the new construction as well as for the protection of the surrounding environment.

Excavated material (including dredged material) imported from elsewhere for use as backfill or for fill to change land contours or establish desired land features in bodies of water would require more attention. It is expected there would be no barriers to utilization in most cases, although more care would be needed in the handling and placement of material in a water body.

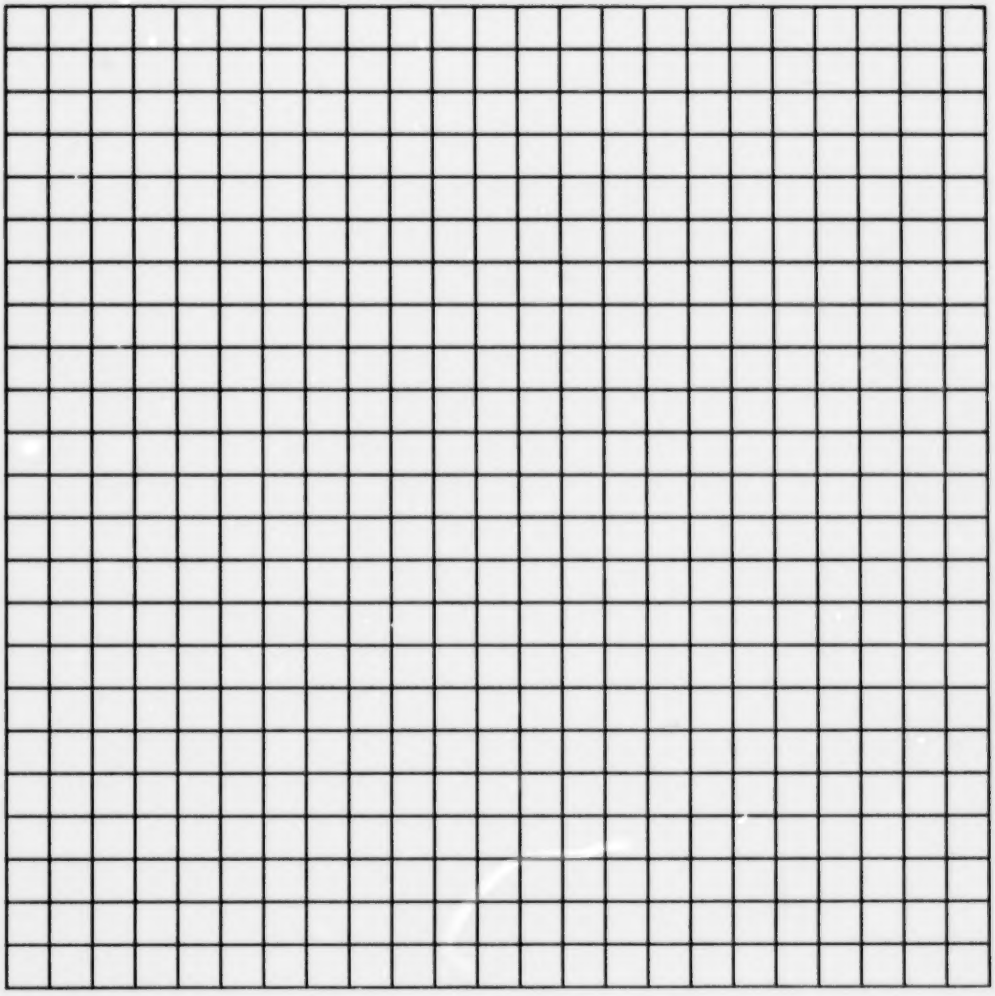
Administrative and technical guidelines would be prepared to ensure a sufficient level of control over the handling and placement of backfilling waste, to minimize the cost and delay associated with control procedures and to clarify the role and responsibility of those involved in the handling and placement of these materials.

The administrative guidelines will suggest a number of levels of control with the first level to be exercised by municipalities. Subsequent control would entail a joint effort involving Ministry staff.

There is currently a number of guidelines and criteria used to assess the suitability of placement of excavated materials. They were not developed specifically for this purpose so new technical guidelines are needed to provide state-of-the-art criteria for the placement of excavated materials as lakefill and landfill.

Some non-hazardous solid industrial wastes can be used as backfill at construction sites. Sites which receive this material will require Part V approval. Such wastes must be non-putrescible. Leachate tests must be conducted and the results evaluated against the Ontario Drinking Water Quality Criteria. Sites approved for backfilling waste would be exempt from the perpetual care requirements and Ministerial approval for post-closure use.

Reduction, Reuse, Recycling and Recovery



REDUCTION, REUSE, RECYCLING AND RECOVERY

Waste may be considered as material for which no further value is recognized by the individual or company producing it. Waste material may in fact have a use, but putting that use into practice requires effort and involves cost.

Material that is not reused must be removed and disposed. Generally, the total real cost of removing and disposing of waste material, including social and environmental costs, is not fully apparent to individuals and companies.

At an information session organized for the Ministry of the Environment by the Waterloo Public Interest Research Group (report in Appendix 1), there was a strong consensus that two conditions are essential for the increased development of reduction, reuse, recycling and recovery programs:

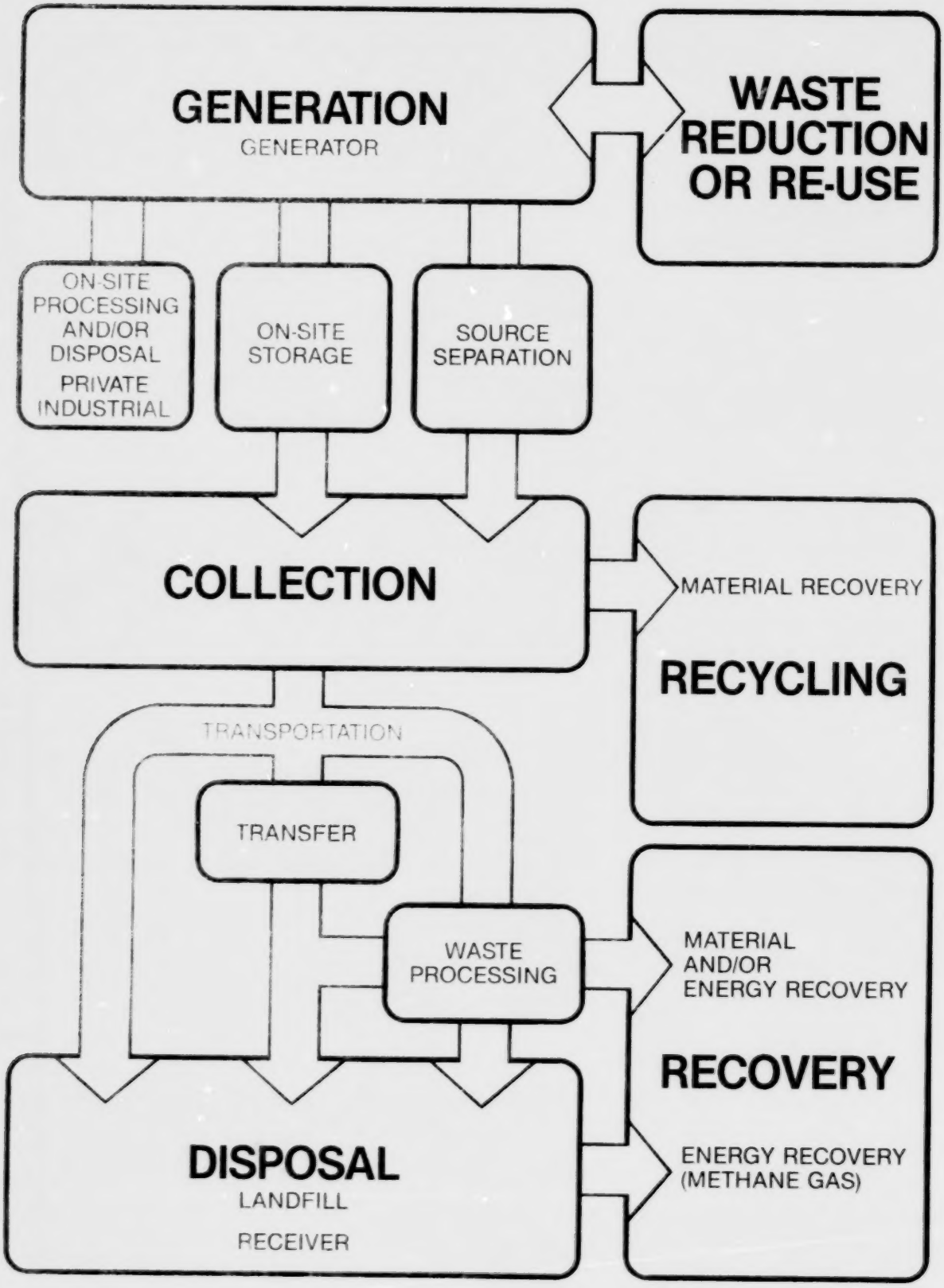
1. The costs of collecting and disposing of waste, quoted by municipalities, are not usually realistic. Serious efforts must be made to develop true costs, which include, among others, social, planning, approval and realistic replacement value of disposal sites. Only when this is done will the costs of reduction, reuse, recycling and recovery be cast in a true perspective.

2. There is a need for a concerted effort to educate the public, municipalities and industry with respect to both the problems and the advantages of reduction, reuse, recycling and recovery

A detailed report on the "4 Rs" -- reduction, reuse, recycling, and recovery -- is provided as Appendix 2 to this Blueprint.

Figure 1 illustrates the four Rs in the context of a total Waste Management System.

Figure 1 — WASTE MANAGEMENT SYSTEM



Reduction

The quantity of waste generated could be significantly reduced in a number of ways, including:

- More effort by industry to increase the durability or repairability of certain products. Such products may cost more, but this incremental cost could be balanced against longer life, and should be considered in the context of the willingness of consumers to pay higher prices for higher quality and durability.

- Modification of goods and packaging to permit certain materials to be recovered or recycled. Goods such as laminated packaging and non-soluble glues are examples of materials which provide significant obstacles to recycling. Some reduction is also possible in the amount of material used in packaging.

- A conscious decision by consumers to purchase goods which do not have an unnecessarily high content of packaging materials.

Reuse

The direct reuse of materials which otherwise would become waste provides another means of reducing the quantity of waste destined for landfill. An obvious example is the use of refillable glass bottles for soft drinks and beer.

A significant aspect of reuse relates to the number of times that the material can be utilized, and whether at the end of that useful life the material can be recycled for another purpose. For example, refillable glass containers for beer are reused an average of 20 times, after which the glass may be recycled by melting it down to emerge as another refillable container.

Possible changes in present legislation restricting the use of non-refillable containers for carbonated beverages are not discussed in this Blueprint. An intensive review of this subject has been conducted with public input.

Recycling

At present, the principal means of recovering materials for recycling is by source separation.

Source separation is defined as the process of keeping potentially recyclable materials separate from other mixed waste to simplify their collection and reclamation. The principle has been used by industry for many years through a system of dealers and brokers engaged in obtaining, processing where necessary, and marketing recyclable materials such as scrap metal, paper, and old corrugated cardboard containers.

The direct trading of the by-products of manufacturing and processing, many of which otherwise would become waste, is carried out for example through the Canadian Waste Materials Exchange, which is managed by the Ontario Research Foundation and funded by the Federal and Ontario governments.

Further use of current recycling methods, and the development of new methods, present a great challenge to industry. It has been demonstrated that there can be considerable savings from the implementation of recycling programs.

It is only more recently that source separation has been applied to the sorting of office and domestic wastes. The most common activity in this area has been the collection of old newspapers directly from the household, and the recent development by the Ministry of the Environment of programs for the separation and collection of used office papers, primarily from government buildings. This program has enjoyed considerable success, and will be expanded in the future.

Recovery

Waste can be processed to recover either material resources or energy resources or both. Waste processing for material recovery has not yet been developed to the same degree as processing for energy recovery.

a) **Material Recovery**

Generally, material recovery involves processing mixed waste as received, with mechanical separation of some elements of the waste. The separated materials, usually after further processing, may be of use and of value, as scrap metal, refuse-derived fuel, compost, or other materials having a degree of utility. An example of waste processing for material recovery is the Ministry's Experimental Plant for Resource Recovery in North York.

The industrial reprocessing of waste materials is usually to recover a particular component of the waste material. Examples include solvent recovery and the blending of waste material with other components to produce a material from which other products can be manufactured.

b) **Energy Recovery**

Waste material also may be incinerated, with or without limited processing, to produce energy which is recovered in a usable state as a source for steam or electricity. Incineration of semi-processed waste for the production of energy is carried out at the Solid Waste Reduction Unit (SWARU) incinerator in Hamilton.

The Experimental Plant for Resource Recovery and the SWARU incinerator are the only two examples of high technology processing of municipal wastes in Ontario at present, although approval is now being sought for energy from waste facilities in London and Toronto.

The Four Rs: Benefits

Each of the four Rs of waste management offers advantages over the simple disposal of waste. All result in a reduced quantity of waste requiring disposal, thereby minimizing the demand for future landfill space, and conserving material and energy resources.

Waste reduction could have direct economic benefits to a municipality by reducing the costs of collection and disposal, although a significant reduction in quantities would have to occur to have any impact on collection or budgeting practices leading to real savings.

Waste processing for the recovery of material or energy resources has the greatest potential impact on the reduction of waste requiring disposal. Volume reductions up to 90 per cent are possible. Such estimates apply to waste capable of being processed. Some wastes cannot be processed and therefore must be transported directly to disposal.

Source separation cannot be expected to achieve the same reduction in waste as is achieved by processing, but with increased participation by the individual it can have a substantial impact. Public participation will vary widely among different communities, and will be influenced by attitudes, awareness of the program and the level and quality of service. It is considered that the diversion of between 5 per cent and 20 per cent of the municipal waste stream is generally attainable if reasonable levels of service are provided.

Recent experience with a pilot program in Kitchener, by a private firm operating a curbside collection system, has led that firm to conclude that it is feasible for the private sector to be in the business. This project has highlighted some of the critical factors necessary for a successful curbside source separation program: strong municipal support, a motivated public, convenient curbside collection, company supplied containers, promotion, and available markets.

A key factor in the success of recycling projects, whether aimed at waste processing for the recovery of material and energy resources or source

separation, is demand for the recovered materials and energy. This is generally beyond the direct control of industry and is subject to widely fluctuating and frequently cyclical conditions on a national or international scale. A depressed state of the economy has an adverse effect on all recycling activities. Depressed markets for recovered materials have limited present source separation activities, and the uncertainty regarding fuel costs has reduced the potential for construction of waste processing plants producing a refuse-derived fuel, or energy.

In spite of this, it is possible in certain instances for industrial initiative to create a demand for secondary materials. For example, the Ontario Paper Company's de-inking operation will soon be in full-scale operation. This will create a large demand for waste newsprint (100,000 tonnes per year) and will give renewed impetus to newspaper collections.

The Four Rs: Barriers

Two barriers to greater levels of waste reduction, reuse, recycling or recovery in the future are inertia and costs.

Opinion polls show that the public attitude toward the four Rs is strongly positive, but actual participation levels usually lag behind the expressed willingness to participate. The individual citizen's involvement is crucial, yet one obtains no direct economic benefit in return for the effort of separating materials for recycling. This lack of direct benefit also influences the acceptance by the consumer of disposable, rather than reusable, products. Well informed and motivated members of the public recognize there can be significant indirect benefits, and it is encouraging that their number appears to be increasing.

Industry practices the four Rs where it is financially attractive to do so. In recent years, many industrial processess have been modified to avoid environmental problems from plant discharges. In solving these environmental problems, a number of industries discovered that they could

also save money by making their processes more efficient. There has also been, in recent years, a significant increase in use by industry of more energy efficient processes, spurred by the increase in world oil prices. A similar approach, giving due consideration to environmental aspects as well as financial aspects, is essential and must be promoted.

The Four Rs: In The Future

The effectiveness and the costs of waste management practices in the future will depend upon the directions which are chosen today. It is unlikely that there will be major advances in waste management technology or reductions in waste generation rates in the near future. Consequently, it is likely that the cost of the collection and disposal of waste will continue to increase to satisfy public demand for more stringent controls and better engineered and operated facilities, and to provide protection both in the short and long term against potential hazards.

As the cost of landfill disposal rises, alternatives such as source separation and waste processing for material and energy recovery will become more and more attractive. With a greater understanding of the potential and the limitations of the various options for waste management, rational decisions can be made based on long-term planning. This should result in the selective use of those options best suited to a particular community, and their introduction at the most appropriate time, to provide both a cost effective and an environmentally sound solution.

The active involvement of the public, industry, municipalities and the province is essential:

1. The public could participate directly by improving their purchasing practices, participating in source separation projects, and supporting the establishment of processing facilities, recognizing that these are options to reduce landfill requirements but not to eliminate them.

2. Industry must accept the responsibility of taking greater account of the environmental effect of its actions and of taking into consideration public costs and benefits in its planning.

3. A greater commitment by municipalities is necessary. It is recognized that a municipality is responsible to its citizens if it takes any action which might incur unnecessary costs and consequently increase taxes. However, some degree of risk should be accepted, provided this is balanced by potential future benefits, both directly by a long-term decrease in waste management costs and indirectly by environmental benefits. Such action should receive the full support of the municipality's residents.

The Ontario Government's Initiatives

The Ministry of the Environment has taken a lead role in encouraging the four Rs by a number of means:

† In 1975, the Ministry offered to provide the entire capital cost of the construction of certain types of waste processing plants. A number of studies were carried out on behalf of municipalities at Ministry expense. Because of changing economic conditions, no facilities were constructed.

† The Ministry's Source Separation Program provides assistance for key aspects of operation, including planning, advertising and start-up for an initial period. Any shortfall in costs during this period is provided by the Ministry. Assistance has been provided to projects for a total commitment of $330,000 in the 1982-83 fiscal year. This assistance has been given to private companies and non-profit organizations operating in co-operation with the municipality.

Proposed Initiatives

The government is determined to provide leadership in developing the four Rs in co-operation with the public, industry, and municipalities, and proposes to pursue the following initiatives. These initiatives are offered as examples which could well be followed by other levels of government and the private sector.

a) Further the development of educational programs in schools

The Ministry would work with other provincial agencies, such as the Ministries of Energy and Education, to establish needs, content and delivery of educational material on the four Rs. These educational efforts could be reinforced through implementation of specific recycling projects wherever feasible and practical.

b) Increase use of products made with recycled materials

Governments at all levels are large consumers of many products, especially paper. Efforts would be made to identify which policies, if any, discriminate against products with recycled content and in such cases revise government purchasing standards so as to ensure that products of acceptable quality but higher recycled content are not only allowed, but favored. This may require a price premium initially to help increase demand and establish competitive suppliers in the longer term.

Government experience with products with recycled content will be passed on to other agencies including municipalities and the private sector to encourage similar approaches.

c) Increase recycling

The Ministry is considering the implementation of a new policy which would require a full commitment to, and support of, the existing fine paper recovery program by all government ministries and agencies. For some time, some Ontario government offices have been sorting and recycling fine paper. The results have established that such a program is financially feasible, and therefore the practice should be embraced by all government ministries and agencies.

Further, the Ministry intends to enhance the promotion of such a program by providing private enterprise with information, assistance and advice.

d) Develop a Ministry endorsed "good packaging" seal

Packaging represents a significant proportion of solid waste. While it is recognized that modern packaging contributes to the quality of life and that packaging systems are designed for different requirements, some systems generate less waste or have less environmental impact than others while still achieving their primary function.

To encourage increased consideration of the environmental impacts in design of packaging systems, the Ministry would undertake a co-operative effort with appropriate industry representatives to design and implement a "good packaging seal" which would identify environmentally superior packaging.

e) A Co-ordinated Promotion of the Four Rs

Awareness of the four Rs and high levels of participation are especially critical so that recycling systems are as cost effective and efficient as possible. Promotional efforts used by the many recycling groups would need to be co-ordinated so that maximum impact might be created. The Ministry would provide assistance in the co-ordination of promotional efforts and information exchange for municipalities, industries, and recycling groups.

f) Actively encourage the development of standards for products containing recycled materials

The Ministry of the Environment would work with industry, associations, government agencies, and other organizations which establish standards, to assist in developing standards for recycled content in materials.

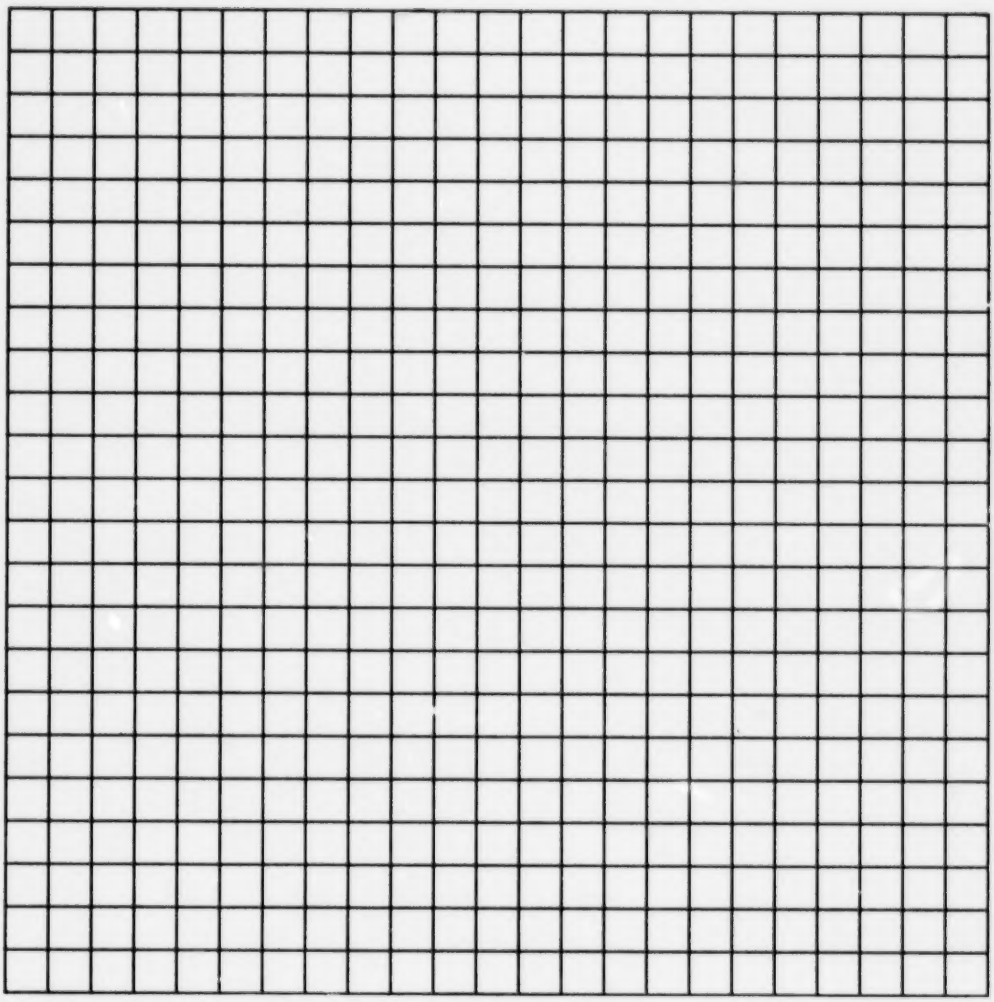
A Disposal Fee?

To provide a more direct incentive for reduction, re-use, recycling and recovery, consideration could be given to the establishment of a fee, levied at all disposal sites based on the quantity of waste received. Funds generated by this fee would be used to encourage the four Rs. The funds could be used to:

- finance source separation activities and the construction of processing facilities for material and energy recovery;
- subsidize operating costs of these facilities in the start-up years;
- increase market demand for waste-derived materials and energy by offering incentives to industries to use the products of the four R activities;
- provide financial credits for additional material or energy resources recovered and reused in Ontario;
- provide grants for small-scale equipment and hardware for use in source separation and waste reduction programs;
- provide financial support for demonstrations of new or improved opportunities for reuse;
- provide financial support of programs to promote the four Rs.

Considerable discussion and review of the disposal fee concept is essential if it is to be developed and implemented as an effective incentive to the four Rs.

Authority and Responsibility



AUTHORITY AND RESPONSIBILITY

Many of the measures required for improved waste management practices require a more precise delineation of responsibility, and in some instances authority, for the provincial government, municipal governments, industry, and the public.

The Province of Ontario

Provincial government agencies involved in waste management originally performed a purely regulatory role in the handling and disposal of waste. Since that time, the **Ministry of the Environment** has assumed increasing responsibilities, including research and development, the encouragement of reduction, reuse, recycling and recovery, and the provision of funding for long-term planning and some aspects of the operation and closure of disposal sites.

The Ministry is responsible for the preparation of acts, regulations and guidelines for the control of waste, and for approving all waste disposal, handling and processing facilities. Technical and administrative guidance is also offered through the Ministry's Regional offices to assist municipalities and industry in improving their waste management practices.

Technology

The Ministry of the Environment is actively involved and will increase its activities in technology assessment - the monitoring of research and development in other jurisdictions, and their possible application in Ontario.

The Ministry also will place increasing emphasis on technology transfer - the transfer of technical information to those involved in waste management in municipalities and industry.

Closed Sites

The Ministry introduced a program in 1979 to identify those landfill disposal sites which had been operated and closed before waste management legislation was passed in 1970. Approximately 1,500 **municipal and private** closed sites were identified, and 197 of these were considered to have the potential for adverse environmental impact. These were field tested and varying degrees of environmental problems were discovered at 11 sites. Detailed engineering studies were carried out and remedial measures taken.

An investigation of priority **industrial** waste sites identified some off-site adverse environmental impact at 11 of 52 sites. Remedial measures have been taken at these 11 sites.

Active Sites

The Ministry is reviewing information on, and inspecting all active waste disposal sites. The objective of this study is to centralize the information gathered through a data processing system to facilitate controls and planning. It is proposed that a further stage in this program will be the re-evaluation, on a priority basis, of landfill sites taking municipal or controlled wastes, the object being to confirm their suitability for the disposal of different categories of wastes and to measure the possibility of off-site damage to the environment.

Enforcement

Through its Regional and District offices, the Ministry of the Environment monitors and controls the operation of facilities in accordance with the conditions attached to their Certificates of Approval.

As a result of the Blueprint process, there will be changes in control and regulation. The Ministry will ensure proper enforcement.

Role of Other Provincial Agencies

The **Ontario Waste Management Corporation**, created by an Act of the Ontario Legislature in July, 1981, is the vehicle through which the Province has accepted a responsibility for the treatment and disposal of special waste. The Corporation's mandate includes:

* † Assessing the types and quantities of waste that require special treatment and disposal.

† Planning and assessing optional facilities and sites based on this information and on a comprehensive review of suitable site locations.

† Formulating a detailed proposal in the light of information and advice gathered from interested organizations and from the general public and presenting it to a formal public hearing.

† Building and operating facilities.

† Undertaking other programs that affect the generation and management of special waste, and encouraging its recovery, recycling and reuse.

The Ontario Waste Management Corporation is accountable to the Minister of the Environment for its activities and financial requirements. The Ministry is responsible for regulating the activities of the Corporation in the areas of approvals, controls and monitoring, in the same way it regulates other waste receivers. The Minister establishes broad policies within which the Corporation conducts its day-to-day operations.

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*Ontario Waste Management Corporation. OWMC: Facilities Development Process: Phase 2 Report, Toronto, January 1983, pp.2-3.

In May, the Corporation issued its Interim Phase 3 report outlining a number of candidate areas for the treatment and disposal facilities for special wastes. A Final Phase 3 report indentifying candidate sites is expected this fall.

The **Ministry of Natural Resources** operates many small disposal sites in Northern Ontario.

The **Ministry of Energy** is engaged in a joint program with the Ministry of the Environment to encourage the use of waste projects as energy sources. Funding is available from the Ministry of Energy to assist in carrying out feasibility studies, and in appropriate cases capital assistance is provided to both the public and private sectors.

A Provincial policy statement under the new Planning Act is being prepared in co-operation with the **Ministry of Municipal Affairs and Housing** with a view to setting out the Provincial interest in requiring municipalities to incorporate the land use components of waste management planning into their planning documents.

It is also proposed that the Municipal Act be revised to allow flexibility for municipalities, counties, and regional governments to assume the authority for the collection and disposal of their wastes in accordance with the municipal level best qualified for the role.

Municipalities

Generally, municipalities accept responsibility for collection and disposal of domestic and some commercial wastes produced within their own boundaries. The collection of commercial and solid non-hazardous industrial wastes in larger municipalities is carried out by private companies, yet most municipalities are prepared to accept this waste at their disposal facilities. Special wastes are collected by private companies, but their disposal is most often not handled by municipalities.

It is essential that the authority and responsibility of municipalities for waste management be more clearly defined.

Municipalities must accept a degree of responsibility for **all** wastes produced within their jurisdictions, though the extent of their responsibilities will vary in relation to collection or disposal, the classification of waste involved, and the elements to be included in long-term municipal planning.

Collection

Collection and related matters such as the collection of source-separated materials for recycling should remain primarily a local responsibility, since local communities are best able to marshal support for such programs.

Disposal

Disposal requires examination on a broader scale, and can be more effectively and safely implemented by a body acting on behalf of a number of individual municipalites. This has been recognized by provincial legislation in the case of some regional muncipalities and restructured counties. The principle should be extended to all of them and to counties or other appropriate groups of municipalities which would benefit from a co-operative approach.

It is considered particularly important that waste management planning be carried out over a geographical area sufficiently large to enable wastes produced within that area to be handled and disposed of safely and at minimum cost.

Special Waste

Even the largest municipalities do not have the resources and therefore the capability to effectively handle and dispose of special wastes. The Ministry of the Environment has provided specific measures to deal with the problems associated with such wastes through, for example, the formation of the Ontario Waste Management Corporation and proposed

legislative action. However, this does not remove from any municipality the responsibility to be aware of **all** wastes produced within its boundaries, the handling and disposition of these wastes, and in particular the responsibility to control development through their planning processes in cases where suitable handling and disposal facilities might not be available to receive waste produced by a proposed industry.

Public Information

It is essential that municipal governments involve the public through all stages of the waste management planning and implementation process.

Guidelines for an information program should be incorporated into the terms of reference for a municipal waste management plan and followed throughout the various stages of its development and implementation.

Inter-Municipal Co-operation

Instances arise where no suitable disposal facility can be provided within the boundaries of a particular municipality or group of municipalities. In such instances, only rarely has it been possible to negotiate disposal facilities outside the given geographical area.

An improved mechanism should be considered to resolve this problem. It is proposed that Provincial legislation be amended to allow a municipality to appeal to an agency such as the Ontario Municipal Board for a binding decision.

Most important, the Board should be empowered to consider the conditions which would be attached to its approval, covering necessary precautions and charges, including the charges to be assessed for disposal.

Waste Management Cost Accounting

Because of the way waste management practices have evolved, not all municipalities have calculated the true costs of their waste management programs.

First, most municipalities spread their waste management costs through several separate budgets. Second, most municipalities do not fully take into account costs such as those involved in planning, hearing and administration, and the cost of future landfill replacement. As a result, municipalities tend to understate their costs of waste management. A determination of true costs by municipalities is an essential first step in the waste management process, to establish among other things equitable charges for those using the services and to obtain a realistic assessment of the alternatives of disposal practices relative to waste processing or recycling options.

Industrial Responsibility

An industry producing waste has two roles to play in the field of waste management. The first is the management of its special wastes and the planning necessary to deal with these wastes. The second is the reduction of waste by improvements in the industrial processes which generate these wastes.

Industry has a responsibility to take into consideration the environmental effects of its actions as well as private concerns in its waste management planning.

It is also incumbent on industry to continue its efforts and expand its achievements in developing and carrying out programs dealing with reduction, reuse, recycling and recovery.

To ensure that industrial operators take greater responsibility for safe and efficient handling, transport, processing, and disposal of waste, the Ministry is proposing a number of changes in legal requirements.

Generators

Appendix 8 presents a draft proposal which would require generators of hazardous, site-specific and liquid industrial wastes to register their wastes with the Ministry of the Environment. This draft regulation outlines the generator's responsibilities in the following areas:

- Classifying waste and testing for waste characteristics;
- Completing waybill forms;
- Providing emergency management procedures to carriers;
- Ensuring carriers and receivers are properly certified;
- Taking back waste when refused for disposal by its receiver.

Carriers

Waste carriers provide a vital link in the management of waste. Consequently, the Ministry certification program for waste carriers will be amended so as to provide greater control.

Increased responsibilities for carriers are outlined in the proposed revisions to Regulation 309 and Regulation 313 of the Environmental Protection Act (Appendices 6 & 7). Among these responsibilities is a requirement that all waste carriers must carry a letter of credit for $50,000, in 1983 dollars, in favor of the Ministry of the Environment. The Ministry will have access to these funds for any remedial actions required as a result of illegal deposits of waste or any other improper actions on the part of the carrier.

It is proposed that Regulation 313, which at present governs the transfer of liquid industrial waste, be extended to include the transfer of hazardous solid waste and site-specific waste.

Receivers

The Ministry proposes that a computerized receiver profile be maintained to identify the types of waste that a receiver may accept under his or her Certificate of Approval. This information would be matched with the incoming waybill information to identify any potential improper waste disposal activities.

Industry Guidelines

The Ministry of the Environment intends to develop guidelines to assist generators, carriers and receivers. These guidelines will cover driver training needs, utilization of industrial organic waste on agricultural land, and assessment of site-specific waste and sites.

The Public's Right-to-Know

Some groups and individuals have expressed an interest in complete access to detailed information on the generation of special and controlled wastes by industry, the characteristics of such wastes, its transportation, treatment and disposal. The Ministry of the Environment proposes to require this information as part of its monitoring programs, in which case municipalities would have to be aware of general industrial waste management practices within their jurisdictions.

When it comes to full disclosure to the public, problems of a legal or ethical nature may arise because of the proprietary nature of some of this information and its possible misuse by competitors. This is a difficult issue, and one on which the Ministry invites further public comment.

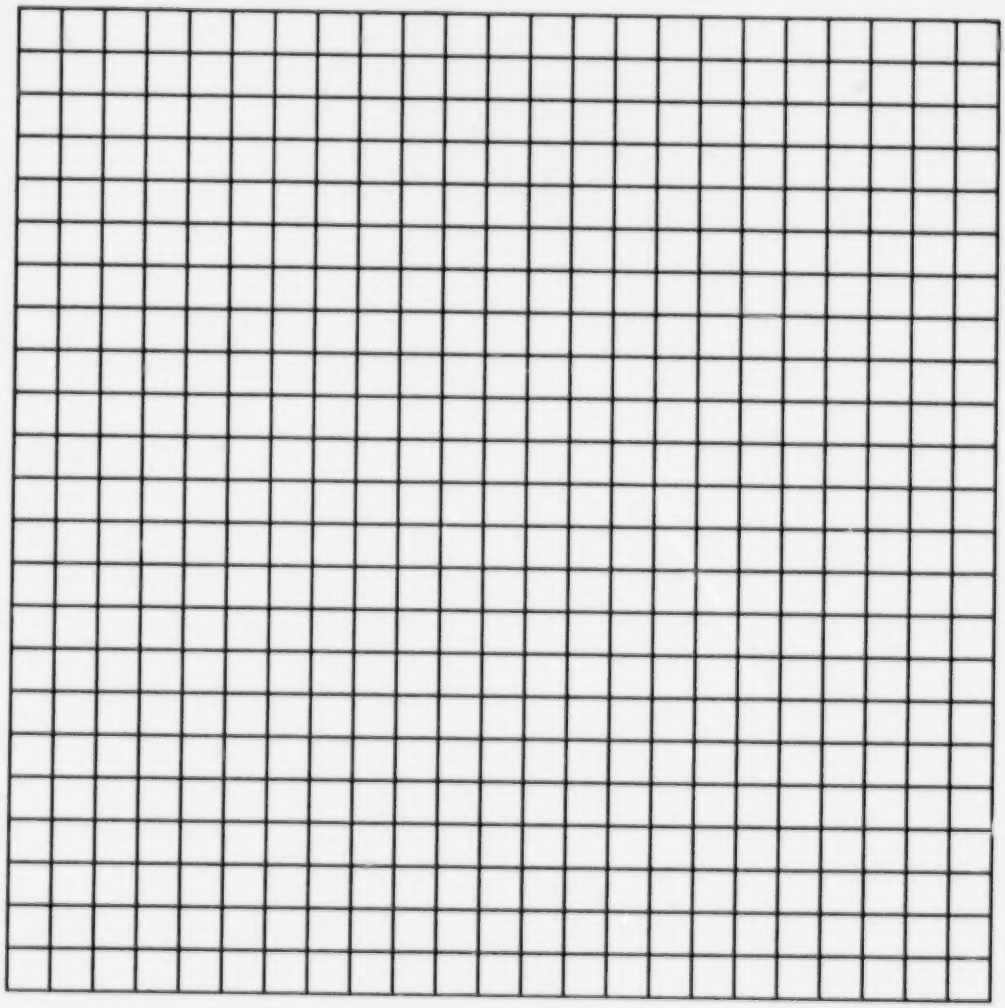
The Public

During the past decade, there has been an increased interest in waste management activities and a consequent recognition of the need for continuing consultation to assure on-going consideration of public concerns. Unless the residents of Ontario are given the fullest opportunity to express their views and concerns, beginning at the earliest

planning stages of waste management activities, there is the danger of misunderstanding, mistrust and confrontation.

The Ministry of the Environment appreciates and desires the involvement of the public on a continuing basis through all stages of development of programs and projects. This Blueprint has as one of its major objectives the involvement of all sectors of our society. Early public consultation provides a background of sound information upon which people can express their own views and indicate to project planners and elected representatives their concerns, their values and their attitudes.

Area Waste Management Planning



AREA WASTE MANAGEMENT PLANNING

Waste management planning involves the development of a waste management system for a particular geographic area, including evaluation of the options available to provide service to the area in both the short and the long term.

Long-term area waste management planning must be carried out by municipalities and be fully co-ordinated with other municipal land use planning to protect the environment and the public and to avoid potential conflicts of land use.

Since 1971 it has been the policy of the Ministry of the Environment to provide 50 per cent of the cost of municipal area waste management planning studies. The early studies were limited to the management of municipal waste, and to the selection of disposal facilities. More recently, the Ministry has participated in the financing of plans with a broader scope, covering programs for all types of waste, whether municipal, controlled and/or special.

A comprehensive waste management program which is fully co-ordinated with municipal land-use planning is essential. Such a long-term master plan, developed with the co-operation of the province, municipalities, industry and the public, is an essential first step in the selection, design and location of processing and disposal facilities.

Terms of reference for the formulation of an area waste management plan are suggested in Appendix 9. It is worthwhile noting in the body of this Blueprint the essential elements of such a plan:

1. The term of such a master plan should be 20 years, and it should be updated at least every five years.

2. An inventory of existing waste management facilities and transportation networks in use in the system should be prepared, along with an assessment of their potential economic, environmental and public impact. This assessment should include an evaluation of the remaining useful life of existing facilities and potential future uses after closures.

3. An inventory should be prepared of all wastes produced in the plan area, types and quantities generated, and potential changes over the period.

4. Requirements should be set for new facilities and the timing of their establishment over the period.

5. Development and assessment of capital and operating costs of all of the system options should be considered.

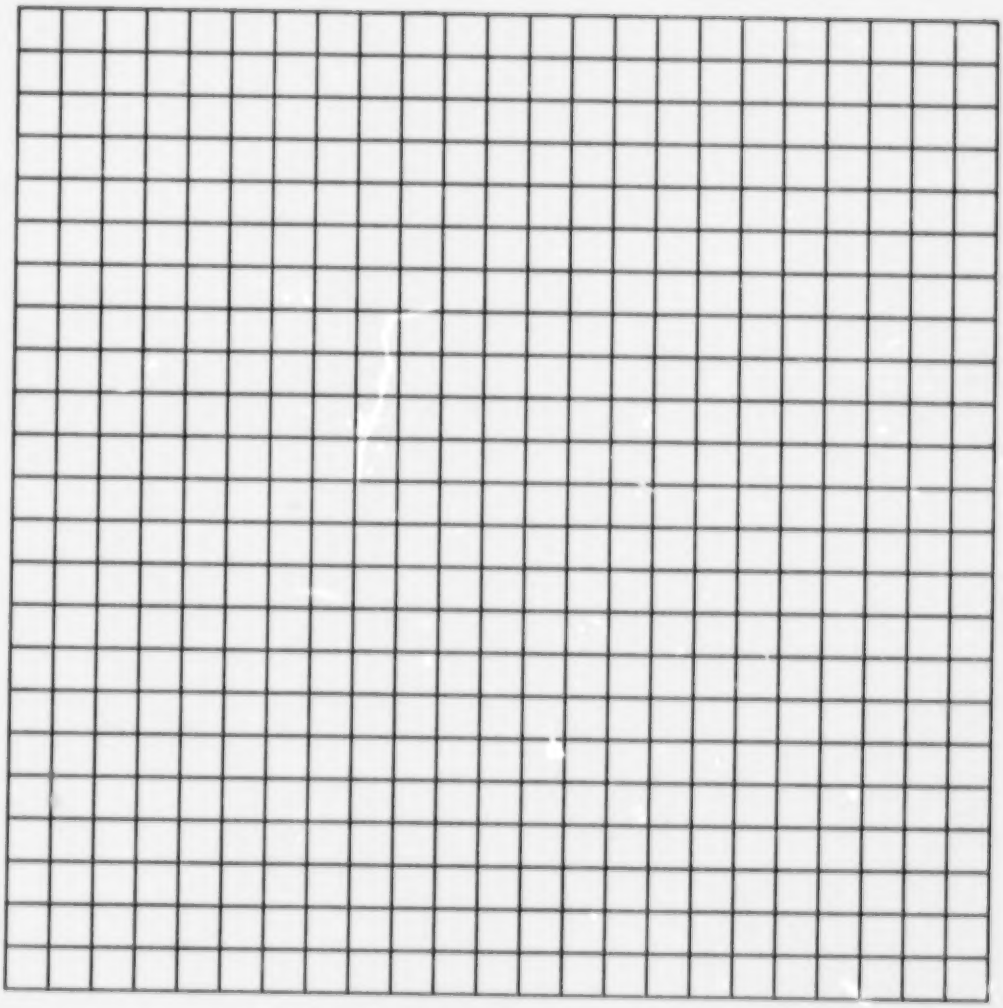
6. The system options should be evaluated in terms of all potential impacts -- technical, environmental, economic and social -- and considered in relation to other municipal planning and provincial goals.

7. A detailed development schedule should be prepared for the selected system, including critical dates for the start of facility design, environmental assessment, development, operation and closure and post-closure.

Waste management decisions should be made within the context of a waste management plan. It is essential that the recommendations of the plan be followed, and that individual elements, such as disposal facilities, be constructed and put into operation so that they are available to replace existing facilities which have either completed their useful life, or are no longer environmentally acceptable. To ensure this, the Ministry is prepared to accept a stronger role in the future by requiring action to be taken at the appropriate time so that suitable facilities become available when needed, and crisis situations requiring emergency action are avoided.

In keeping with the objectives of the Blueprint, a program of public information and involvement must be incorporated into the process. The final document should include as part of the schedule for development a program for continuing public involvement, leading up to the approval stage.

Hearings, Approvals and Appeals



HEARINGS, APPROVALS AND APPEALS

An effective waste management program must establish clear guidelines for the actions and behavior of those who engage in the handling and disposition of waste. At the earliest stage, these guidelines are applied through the hearings, approvals and appeals process. This process is a vital component of any waste management program, since it helps to anticipate potential problems before they are allowed to occur, and because it helps to resolve any differences which may exist among all the parties to any waste management project.

Under the present system, there is some confusion with respect to hearings, approvals and appeals under the Environmental Protection Act, the Environmental Assessment Act, and other provincial statutes.

Problems have resulted from:

- Uncertainty regarding requirements for environmental assessment;
- Potential duplication of hearings, which leads to delays and additional costs; and
- The application of two different statutes (Environmental Protection Act and Environmental Assessment Act) and three different hearing processes (including those under the Consolidated Hearings Act) dealing with waste management.

The different approval requirements currently attached to municipal and private waste facilities are neither consistent nor equitable. Furthermore, growing public concern over the siting of waste facilities has led to a greater need for broader input into the consideration of proposed operations.

The Choice: The Environmental Assessment Act

It is proposed that in the interest of consistent rules governing environmental protection, all waste management facilities, whether operated by municipalities or private industry, should come under the

authority of the Environmental Assessment Act (see Appendix 11). It may be noted that approval requirements for establishing waste facilities under Part V of the Environmental Protection Act have in practice begun to parallel the requirements of the Environmental Assessment Act.

Guidelines will be developed to provide better direction to all those involved in satisfying Ministry requirements for the Environmental Assessment process, including technical requirements.

Hearings under the Environmental Protection Act are not now mandatory for any site accepting waste at a rate less than the equivalent of domestic waste produced by 1,500 persons. The figure of 1,500 was established arbitrarily in the Waste Management Act, 1970, and experience since then suggests a revision is necessary.

Small sites with insignificant environmental impacts should not require expensive and lengthy hearings in order to gain approval. Any level for a cut-off point is somewhat arbitrary, but a better approach is considered to be one based on the total lifetime capacity of the disposal site (in terms of tonnes of waste) rather than on the size of the population utilizing the site.

A figure of 100,000 tonnes is suggested, representing the municipal waste generated by an average community of about 7,000 persons over a period of 20 years. Other things being equal, the impact on the environment directly relates to the quantity of waste deposited at a site over its lifetime.

Any site for the disposal of waste with a lifetime capacity of more than 100,000 tonnes of municipal or controlled waste should require an individual environmental assessment, as should all types of facilities of any size dealing with special waste.

Alternatives for Small Capacity Sites

The Ministry of the Environment is considering two alternatives to deal with sites accepting municipal or controlled wastes with a lifetime capacity of less than 100,000 tonnes:

1) Approval Under The Environmental Protection Act

Smaller sites could be exempted from the Environmental Assessment Act and would continue to come under the Environmental Protection Act. They would be approved by the Director of the Ministry of the Environment responsible for such undertakings.

The necessity for a public hearing would be governed by guidelines based on concerns expressed by the public, objections from the municipality or, in the view of the Ministry, inappropriate planning and zoning.

2) Approval Through Class Environmental Assessment

A class environmental assessment (an assessment of a group of facilities or sites of the same type) could be prepared to apply to all such disposal facilities. Upon completion and approval of this assessment, the proponent of a facility would be authorized to establish a site at any location provided that the site is established in accordance with the class environmental assessment and any conditions attached to its approval. It still would be subject to a public hearing if there were any significant and irreconcilable concerns.

Exemptions

The Ministry suggests that in addition to smaller sites, certain other disposal facilities be exempt from the Environmental Assessment Act, although they still would require Certificates of Approval under the Environmental Protection Act. These facilities would include those which utilize, store, or dispose of processed organic waste, and open transfer stations which do not accept special waste.

Transfer Stations & Processing Facilities

Enclosed transfer stations or processing facilities costing more than $2,000,000 (in 1977 dollars as defined in the regulations to the Environmental Assessment Act) would require an individual environmental assessment in each case.

For facilities costing less than $2,000,000, either the facilities would be exempted from the Environmental Assessment Act and would continue to fall under the Environmental Protection Act, or such facilities would be subject to a class environmental assessment.

Private Industrial Facilities

The problems associated with private on-site industrial waste facilities are more complex because of the types of facilities and the sources and nature of waste handled. There are two classes of such facilities:

a) Class 1 facilities are located within a company's property and deal only with waste falling within the categories of municipal and controlled waste generated on the property.

   It is proposed that Class 1 sites be exempted from Environmental Assessment Act requirements and be reviewed for approval under Part V of the Environmental Protection Act. For incineration facilities, however, additional approval for air emissions must be obtained under the Environmental Protection Act, Section 8.

b) Class 2 facilities are industrial facilities handling any category of waste and which are located either on the industry's property, handling waste from both that particular plant and other plants, or off-site, dealing with waste from one or more plants under common ownership.

   All Class 2 facilities would be subject to the same approval requirements under the Environmental Assessment Act governing waste facilities operated by municipalities and private operators.

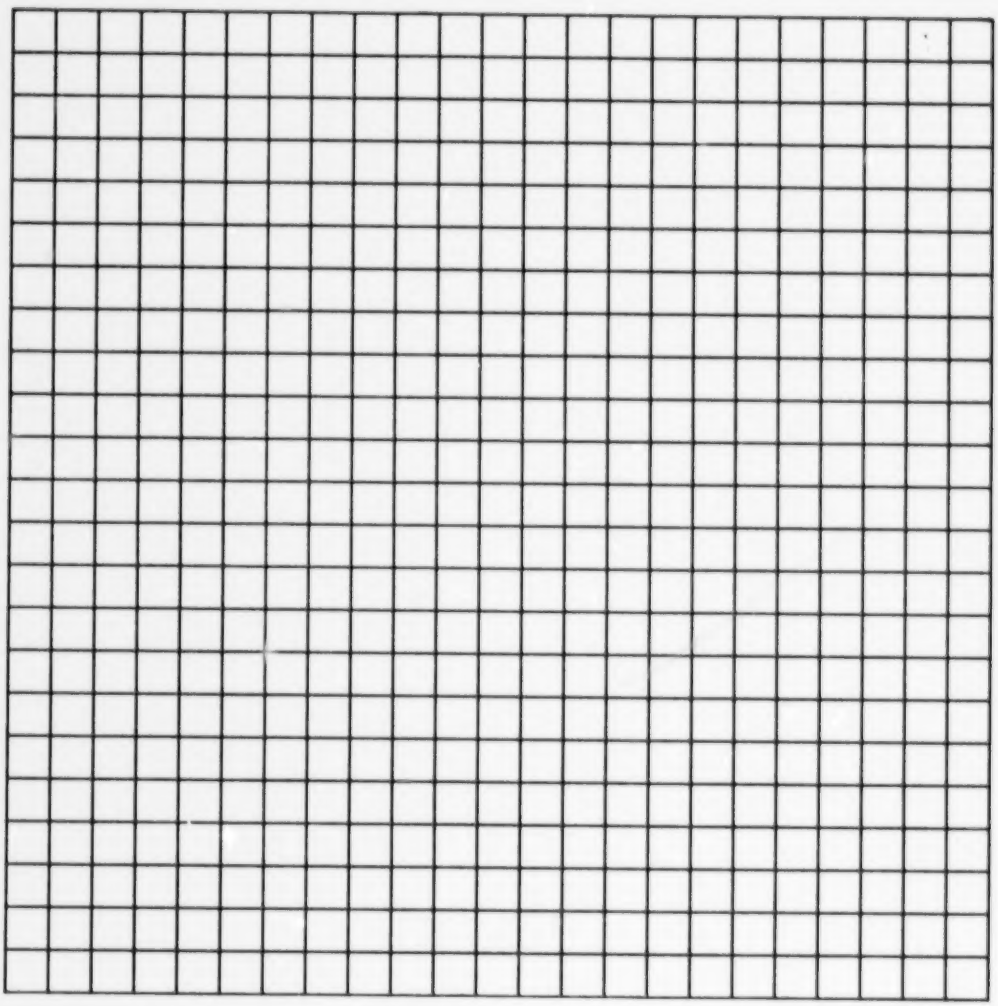
Emergency Approvals

The Environmental Protection Act would continue to apply to the issuance of emergency approvals without reference to the usual requirements of the Act. Such approvals have been granted in cases related to the clean-up of spills. Procedures would be developed to safeguard against abuse of this provision by carriers or operators who might attempt to circumvent the requirements of the legislation.

Appeals

Under the present system, appeals against decisions of the Director to refuse to issue (or to issue with conditions) a Certificate of Approval under the Environmental Protection Act can be made to the Environmental Appeal Board by the applicant. This has been reasonable in relation to hearings by the Board under the Environmental Protection Act, since the Board makes recommendations which might be altered by the Director. It is inconsistent to use this procedure in the case of certificates under the Environmental Assessment Act or Consolidated Hearings Act. Under these statutes, the Board makes decisions rather than recommendations, and other appeal mechanisms are available. A revision to the legislation is proposed so that appeal mechanisms under the Environmental Protection Act cannot be used to appeal against decisions made under the Environmental Assessment Act or the Consolidated Hearings Act.

Perpetual Care:
Protection for the Future



PERPETUAL CARE: PROTECTION FOR THE FUTURE

The Ontario government has in place legislation under which standards are imposed on the operation and maintenance of waste management facilities. Still, it must be recognized that despite improved waste management technology and an increased knowledge obtained from research and development activities, there can be no firm assurance that unforeseen problems will not arise, particularly many years after a facility has been closed.

The Ministry of the Environment believes that if environmental problems should arise during the operation of a facility **or after its closure, in perpetuity,** there should be financial means to provide remedial and/or compensatory measures.

It is suggested that such measures should apply to all landfilling sites, whether they accept municipal, controlled, or special wastes, and to deep well disposal sites. These measures also would apply to treatment facilities for special waste.

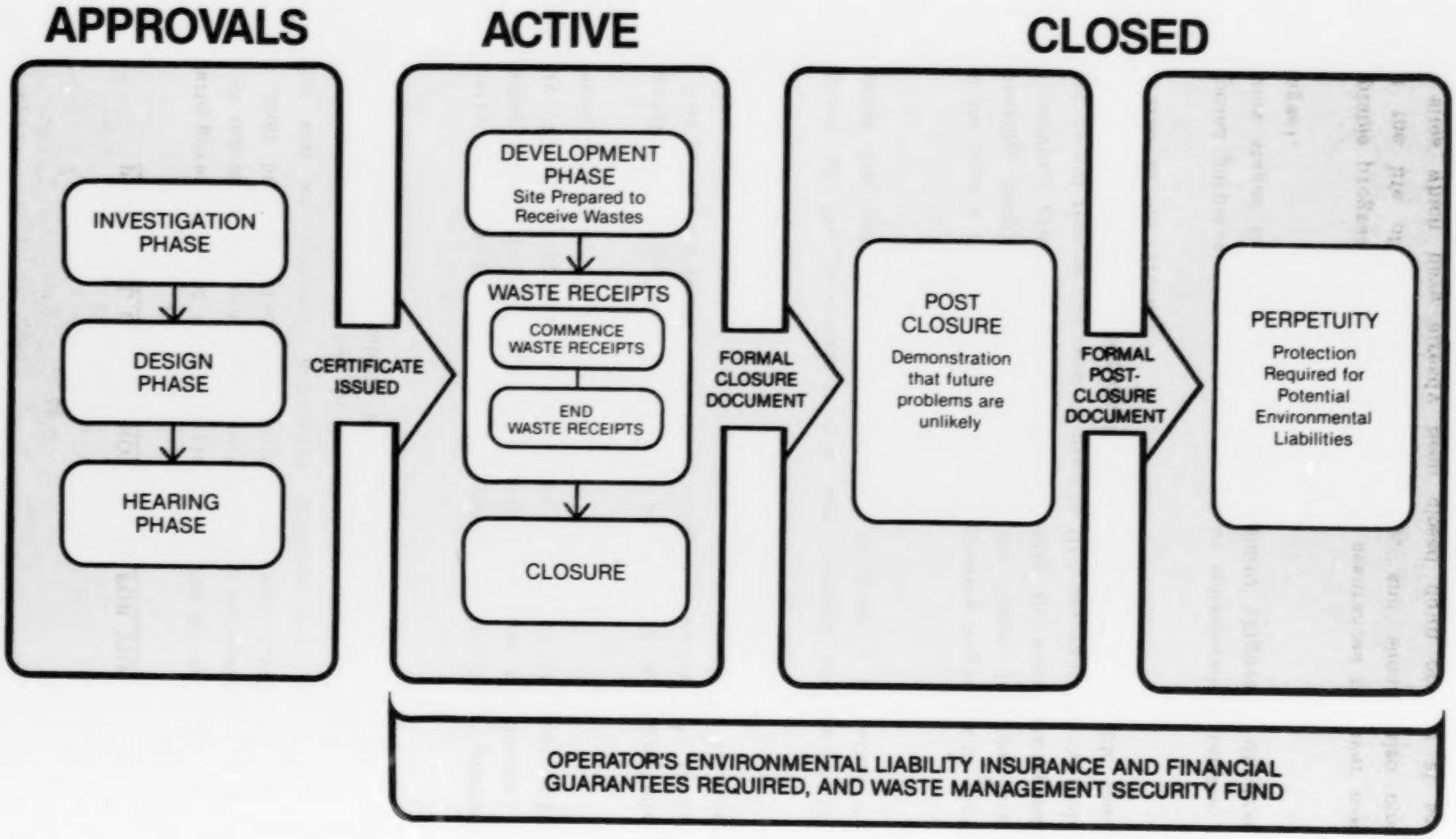
The Ministry of the Environment has won general acceptance from municipalities and industry for the concept of such a perpetual care program.

The need for such a program is based on the growing magnitude of waste, the increasing complexity of wastes, and the trend towards larger facilities serving greater areas. Improvements in waste management technology do not remove the need to provide firm assurance to the public that remedial measures and compensation will be readily available should problems arise in the future.

The proposed perpetual care program should be considered in relation to the various stages in the existence of a facility (Figure 2 illustrates these stages).

An acceptable program must provide financial assurances to cover every stage of the life of any individual facility, and should also cover existing sites which have already been closed down or are at some intermediate stage in the process.

Figure 2 — STAGES DURING THE LIFE OF A WASTE DISPOSAL SITE



The Active Stage

This is the period from the development of a site to the point of closure. After development, during the operational life of the site, normal activities would continue with waste being received and disposed of in accordance with the requirements of the Certificate of Approval. When the site capacity has been used up, the site is closed and no further wastes are received. It is then necessary to carry out the requirements for proper closure, including the application of cover material and the implementation of monitoring programs and gas or leachate control systems. On completion of the active stage the Ministry would inspect the facility to ensure that closure had been properly carried out and would issue a document to that effect.

The Closed Stage

After the issue of the letter of closure, the facility would remain the responsibility of the operator until a period of years has elapsed. During this period, termed the post-closure phase, any significant, potential problems are likely to have manifested themselves. The Ministry also proposes appropriate documentation to formally conclude this phase. After the end of this post-closure phase, the facility enters the perpetuity phase. It still may be necessary to continue limited monitoring and the operation of gas and leachate control systems during this phase for a number of years. An acceptable program must provide financial assurances to cover every stage of the life of any individual site, whether active or closed.

Guaranteeing the Future - The Perpetual Care Program

There are three methods by which financial assurances could be provided: financial guarantees by the operator, insurance and a waste management security fund.

Financial Guarantees

The Ministry of the Environment proposes that proponents of all new disposal facilities, whether private companies or municipalities, be required to provide financial guarantees covering both the periods of active operation and closure. Such guarantees would be required as part of the approval process.

In the case of private companies, all guarantees could either be provided at the approval stage, or could be separated into two components: one to cover contingencies during operation of the site, and one built up over the life of the site as cash in trust to cover costs of closure and unforeseen problems during the post-closure phase.

In the case of municipalities, it would not be considered necessary for bonds or cash deposits in trust to be provided. Rather, municipal proponents of waste management facilities would be required to demonstrate their capacity to provide the necessary funds if and when required.

Insurance

A relatively new type of insurance covering waste management activities is currently available in Ontario. This type of third party insurance which is termed environmental impairment insurance, covers specific environmental risks, including off-site effects which may take a number of years to become apparent.

In order to provide effective protection to the public, this type of insurance should be required for active sites as well as for future sites. Insurance would provide funds for the following:

- Off-site remedial measures when required; and
- Compensation to third parties affected by problems resulting from operation of the site.

Waste Management Security Fund

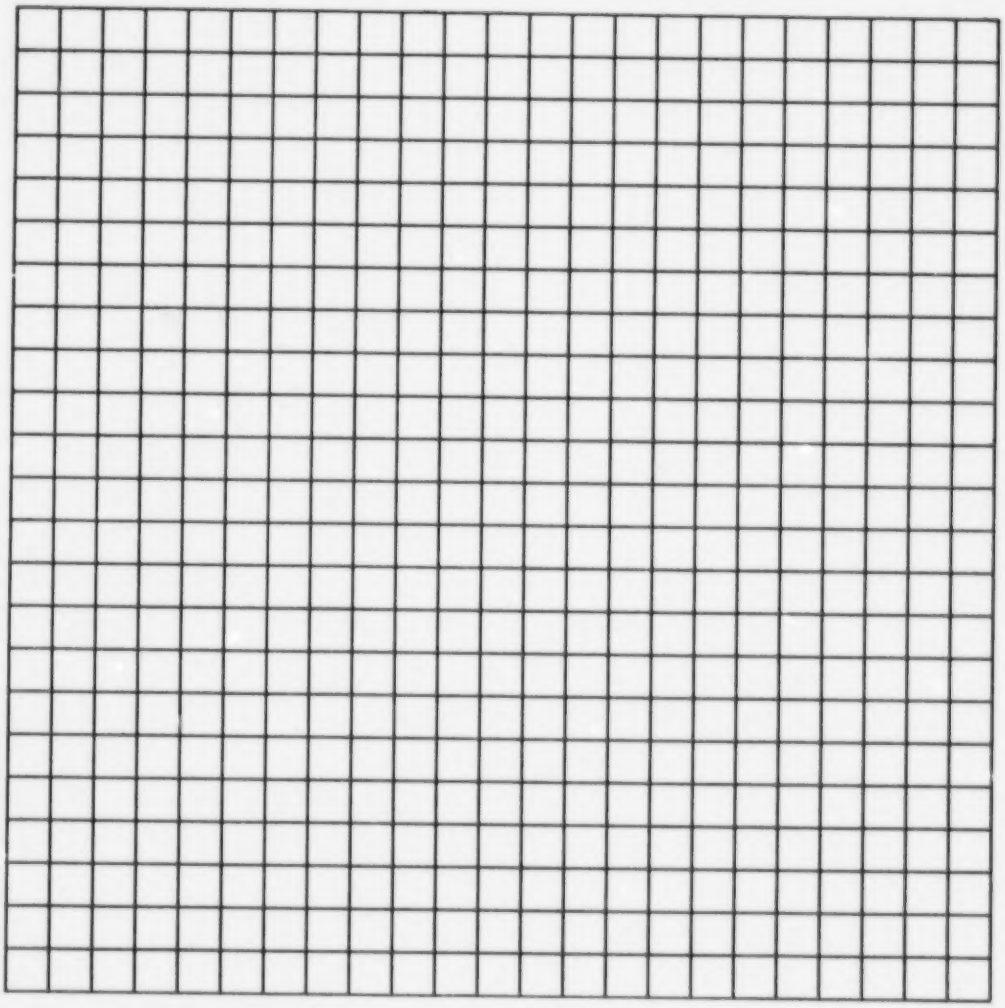
Consideration is being given to the development of a fund under the control of an agency of the Government of Ontario. The fund would provide for remedial measures and compensation in perpetuity from the end of the post-closure phase.

The fund also could be available either for emergency use or during the active and post-closure phases if the financial guarantees and insurance were not adequate. In this case, however, provision would be made that any expenditure from the fund could be recovered from the site operator through legal action.

As tentatively conceived, the fund would be financed by a charge per tonne of waste disposed at existing and future sites. While a charge would be imposed on all wastes, there would be a significantly higher surcharge on special wastes (liquid and solid hazardous wastes and liquid industrial wastes). As an example, a surcharge of $0.30 per tonne on municipal and controlled wastes and $3.00 per tonne on special wastes would build a fund of approximately $30 million within 10 years.

A detailed report on the Perpetual Care Program is provided in Appendix 3, which includes a discussion of these and other options for the application of the three funding mechanisms.

Transitional Requirements



TRANSITIONAL REQUIREMENTS

It would not be possible to implement all the elements of a new waste management program immediately after proclamation of new legislation. Some proposals which may be adopted would require a period of grace, to enable site proponents and site operators to prepare for change.

Generators and Carriers

There will be a twelve to eighteen month phase-in period after a Generator Registration Regulation is promulgated. During this period, generators will be required to analyze waste, submit the results to the Ministry and obtain a registration number.

Use of the new waybill form will be required as soon as changes to the regulation have been made. Generators will not be required, however, to use the registration number or the waste code until the phase-in period of the Generator Registration has ended.

The Ministry will provide a detailed guidance manual to assist waste generators during the registration process. Ministry staff will be available to provide assistance as required.

Carriers of special wastes also would be give a certain period of time to apply for Certificates of Approval under the new legislation.

Existing Facilities

In the case of existing facilities, the following are suggested procedures:

1. For facilities which can continue to operate with no environmental problems, the Director would issue Certificates of Approval under the new legislation to the site operators without application.

2. In cases where there is deemed to be the possibility of environmental problems, the Director would issue a new Certificate of Approval which might require additional assessment and other studies, or the carrying out of remedial measures.

3. If environmental problems were to result from the operation of a facility and remedial measures were not possible, new Certificates of Approval would be issued by the Director, with a condition requiring all operations, or the receipt of certain types of waste, to terminate within a specified period.

4. Operators of existing facilities without Certificates of Approval, in cases where such Certificates would be required under the new legislation, would be given a certain period of time to make application.

Applications in Progress

The status of applications in progress would be dependent upon the stage which may have been reached in completion of the necessary studies.

New Applications

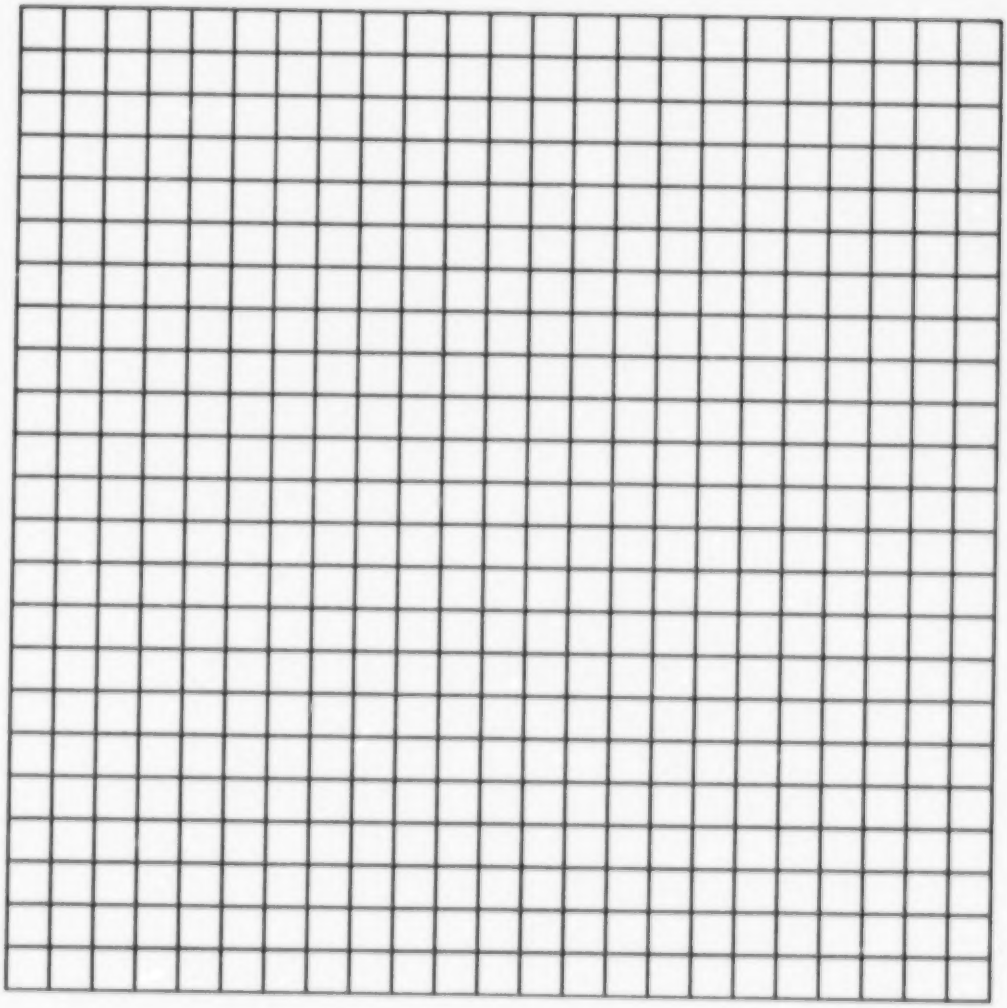
The provisions of the new legislation would apply in full in the case of all applications for approval of waste management facilities which are received after proclamation.

Perpetual Care

The proposed perpetual care program also would require a transitional phase.

A period of one year might be appropriate following proclamation of new legislation before any of the requirements became effective. Longer periods of grace would be needed where there would be the requirement for mandatory environmental liability insurance. These periods would vary for facilities handling special waste, larger municipal disposal sites, and smaller municipal disposal sites.

The Road to Effective Waste Management



THE ROAD TO EFFECTIVE WASTE MANAGEMENT

This **Blueprint for Waste Management** has been prepared to assist the Government of Ontario in producing a logical, organized and effective waste management program for this province. Such a program can be successful only if it has the broadest possible public support.

All segments of society from individuals to industry are invited to participate in developing and refining this Blueprint.

When Environment Minister Keith Norton announced this one-year planning and consultation process in November, 1982, he established the following timetable (See Figure 3):

- Receipt of ideas, suggestions and concerns leading to the preparation and presentation of the proposals contained in this Blueprint by June, 1983.

- A period during which all interested parties would have an opportunity to respond to proposals in the Blueprint.

- A schedule of public meetings at which representatives of the Ministry of the Environment would receive submissions on the proposals in this Blueprint.

- Completion of a final Blueprint.

- Implementation beginning early in 1984.

With the publication of this Blueprint, the stage is set for your further contribution to better waste management in Ontario.

Your comments, concerns, and questions are welcome.

For more copies of the Blueprint, or copies of the appendices, write:

Mr. T.D. Armstrong
Blueprint Co-ordinator
c/o Waste Management Branch
Ontario Ministry of the Environment
135 St. Clair Avenue West
Toronto, Ontario
M4V 1P5

The Ministry team responsible for the Blueprint process will be speaking to groups and organizations across Ontario this summer.

Through September and October, a series of public meetings will be convened in a number of communities in the Province to listen to and receive your submissions and concerns.

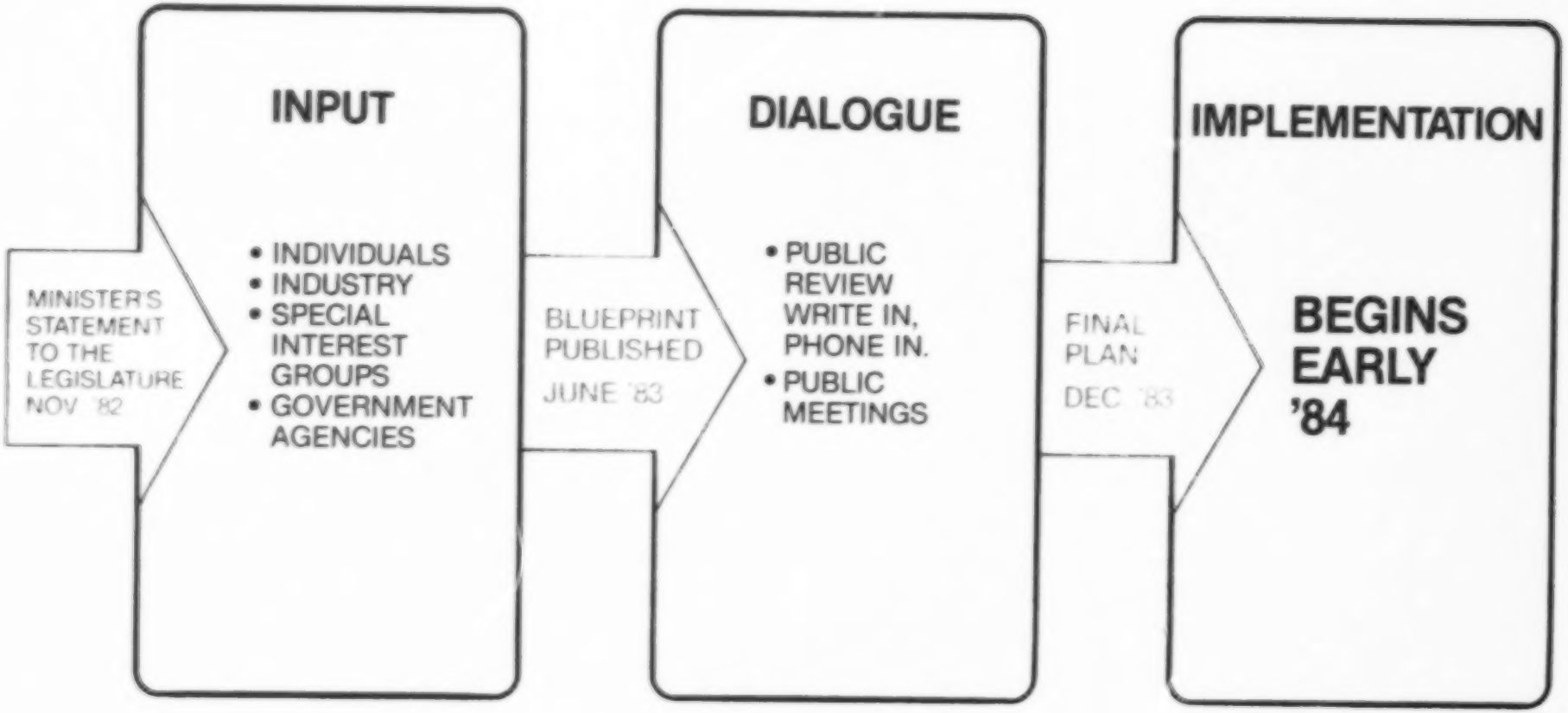
Your contributions throughout this process will assist in transforming the Blueprint into an effective action program.

Information

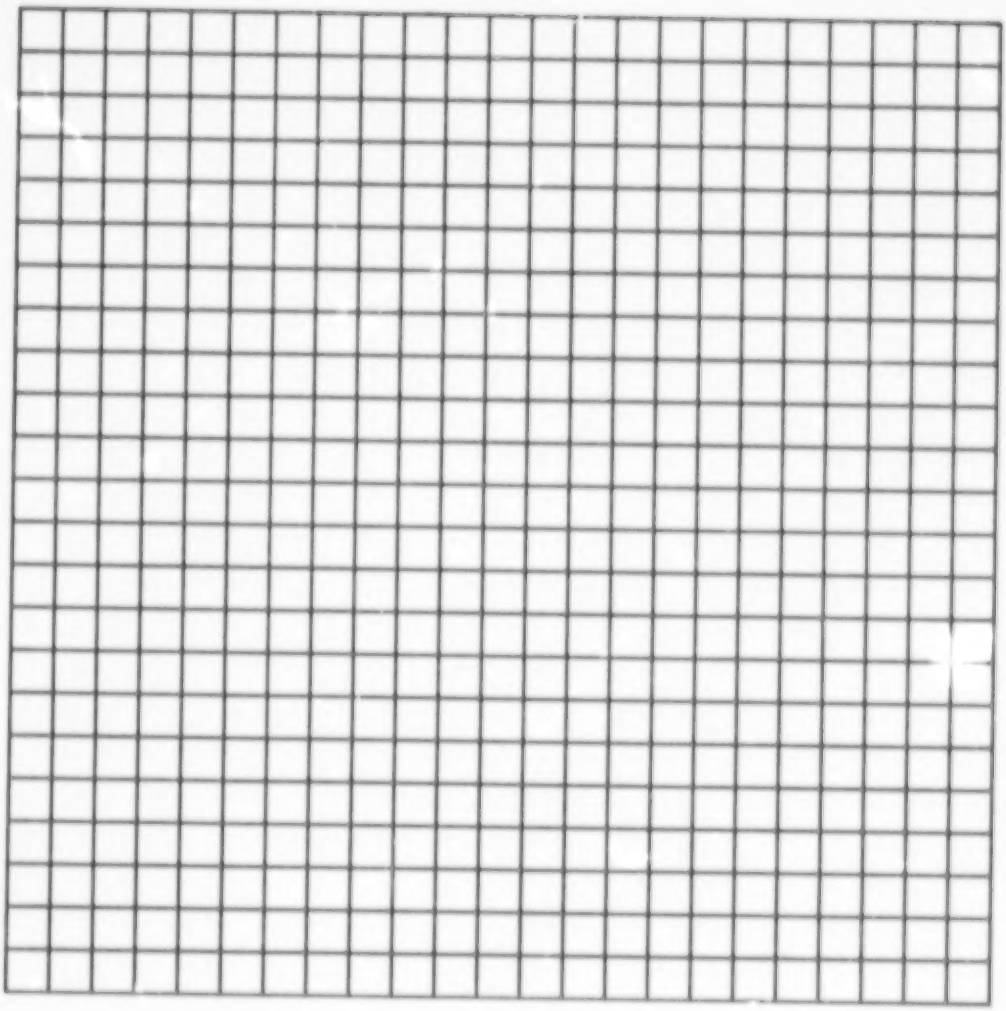
In accordance with the public information policies of the Ontario government, all written submissions and responses to the Blueprint of Waste Management will be available for public scrutiny. Open files will be maintained, including copies of the Blueprint and all appendices, at a number of locations. Copies of the submissions will be entered in these files within two weeks of receipt.

These files will be available at Waste Management Branch and the Main Library of the Ministry of the Environment, 135 St. Clair Ave. West, Toronto, Ontario, M4V 1P5. Duplicate files can be reviewed at all six Ministry Regional offices.

Figure 3 — STEPS TO EFFECTIVE WASTE MANAGEMENT



Addendum:
Background to Waste Management



BACKGROUND TO WASTE MANAGEMENT IN ONTARIO

The Ontario government's first significant initiative with respect to the environment was the formation of the Ontario Water Resources Commission in 1957, a quarter of a century ago. Even at that time, the Commission was able to build upon many years of scientific investigation and operational experience in both the water supply and wastewater treatment areas. Through the 1960s, a comprehensive system was implemented for monitoring, protecting and restoring water quality throughout the Province.

During the 1960s air quality was also given intensive examination culminating in the Air Pollution Control Act of 1967. The administration of this Act and subsequently the Environmental Protection Act, 1972, resulted in significant progress in the control of air contaminants.

As the next logical step a Waste Management Act was introduced in 1970, though only very limited information and experience in effective waste management practices were available at that time. The past 12 years has seen a steady accumulation of information and expertise from our own experience and the experience of others, resulting in more sophisticated waste management practices. It is apparent that a more intensive effort will be necessary to bring the Ministry's waste management program up to the same high standards achieved by the air and water programs.

Waste

Waste is defined in Part V of the Environmental Protection Act as "ashes, garbage, refuse, domestic waste, industrial waste, or municipal refuse and such other wastes as are designated in the Regulations". Two types of waste are defined in Regulation 309: "hauled liquid industrial waste" is defined as liquid waste other than hauled sewage that results from industrial processes or manufacturing or commercial operations and that is transported in a tank or other container for treatment or disposal; "hazardous waste" is defined as waste that requires special precautions in its storage, collection, transportation, treatment or disposal to prevent damage to persons or property and includes explosive, flammable, volatile, toxic and pathological waste.

These definitions are very broad and cover a wide range of material with significantly different characteristics and potential problems. Waste can also be categorized in relation to the generator of the waste.

Domestic Waste

Domestic waste is generated by individuals. It includes food and yard wastes which are primarily organic in nature, packaging materials including paper and paper products, glass, metal and plastic, many of which will be contaminated by the previous contents, and may include very small quantities of hazardous materials such as pharmaceuticals, cleaning fluids, pesticides and the like.

Commercial Waste

Commercial waste is in general similar to domestic waste in its constituents but is likely to include a greater proportion of packaging material. However, certain individual commercial establishments may produce wastes which require different handling and disposal procedures from domestic waste.

Industrial Waste

Industrial waste includes a range of materials with widely differing characteristics. The waste from many industrial sources consists primarily of packaging materials generally comprised of wood and paper products, and manufacturing residues consisting of these and similar comparatively innocuous products. However, industries also produce liquid and chemical wastes with a wide range of properties and degrees of hazard.

Some of these wastes, for example packaging materials, can be handled and disposed of in a manner similar to domestic and commercial waste. At the other extreme, some of the liquid and chemical wastes require exceptional measures of control during handling, storage, transportation and disposal to ensure the protection of the public and the environment. Between these

extremes, many materials may be produced not only by industry but also by commercial establishments, institutions and even residences, which may require special care in handling and transportation, but will not be a problem after disposal. Asbestos is a typical example of such a material.

The present definitions in the Act and Regulation, particularly of hazardous waste, do not lend themselves to development of an effective system of controls, or provide the flexibility necessary to deal effectively with such a wide range of materials of varying characteristics and hazards.

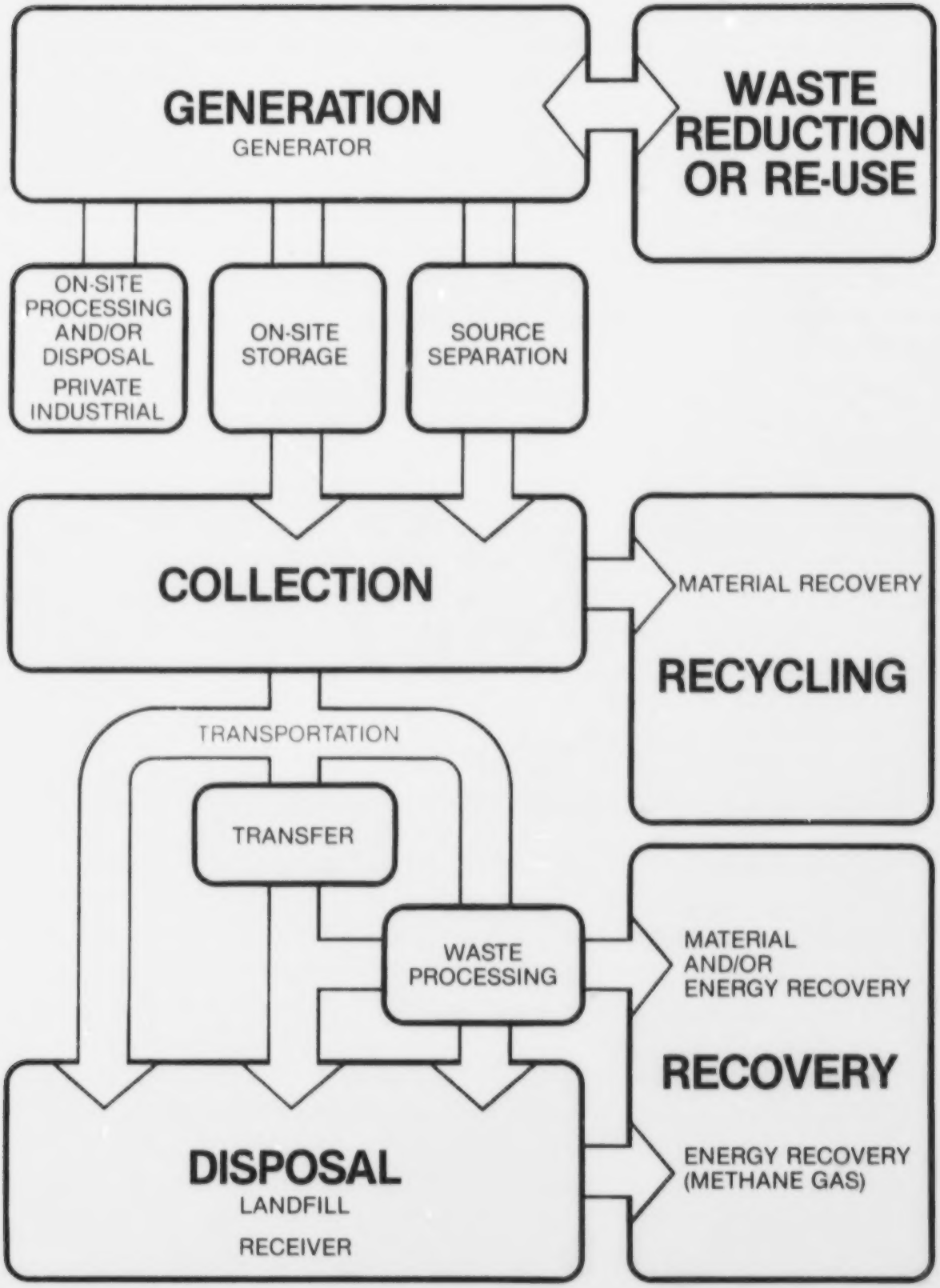
Waste Management Systems

A model of a waste management system is shown in Figure 1, which illustrates the various elements of which any individual system will be comprised. It should be noted that a particular system may not include all of these elements. For example, it may include only generation, on-site storage, collection, transportation and disposal. Conversely, a single waste management system such as that operated by large municipalities may include a number of transfer stations, processing facilities with material and energy recovery, and disposal facilities.

Generation

Waste is generated by individuals, commercial establishments, institutions and industry, and also by municipalities and government agencies. In all cases, some form of on-site storage is practiced, for example by the individual who utilizes a garbage can or a plastic garbage bag. Specially designed containers to simplify collection are used by commercial establishments and some industries. Many industries have on-site facilities for processing the waste they produce with only the residue entering the system, and in some cases may dispose of their waste, or the residue from processing, on their own site.

Figure 1 — WASTE MANAGEMENT SYSTEM



All generators can reduce the quantity of waste they produce, or reuse material which would otherwise enter the waste management system, for example by the purchase of refillable containers.

Collection

Collection in most cases forms an integral part of the system. In the case of residential and some commercial wastes this is usually carried out by municipalities, either directly or under contract with a waste management company. The larger commercial establishments and industries generally contract with a waste management company for the collection and transportation of their waste.

One way of recovering material for reuse, and thus reducing the quantity requiring disposal, is the segregation of material at source before collection. This practice has been carried on by industry for many years.

Transportation

Transportation is an integral part of every waste management system. Collection and transportation will generally amount to between two-thirds and three-quarters of the total cost of a waste management system.

Only a limited degree of control is required over the transportation of domestic, commercial and similar waste, primarily to ensure against nuisances, such as odour or litter, being caused by the use of unsuitable vehicles. Liquid and hazardous wastes require a much greater degree of control, not only to ensure the suitability of the containers, but so that a record is available of all transactions related to the waste from generation to disposal. The Ministry has set up a waybill system with computerized data records to achieve this.

Transfer Stations

At a transfer station, the waste is transferred from the collection vehicle into other, usually much larger, vehicles for transhipment to the

processing facility or disposal site. Transfer stations are included in a system, primarily to reduce the cost of transportation, if the waste has to be hauled a long distance from collection to disposal. Typically, the collection vehicle may hold about 5 tonnes of waste, whereas the transfer vehicle may carry about 20 tonnes.

Larger urban transfer stations will generally incorporate mechanical handling of the waste by conveyor belts, with compactors to compress the waste into the transfer vehicle. Smaller rural transfer stations may consist only of a container into which the individual deposits his own wastes. The container is then collected and transported periodically to a disposal site.

Waste Processing Facilities

Waste processing facilities may be included in a waste management system primarily to reduce the volume and improve the characteristics of the waste prior to disposal, for example by incineration, shredding or baling. In addition, such a facility may recover material for reuse or produce energy, thus providing income to offset the high capital and operating costs.

Disposal

Disposal is also an essential element of any waste management system. Even if waste processing facilities are included in the system, a disposal facility will still be required for the many wastes which cannot be processed and for the residue remaining after processing. The only means of ultimate disposal for almost all waste is on to land. Generally, a process termed "landfill" is used by which each day's waste is deposited and isolated in a cell surrounded by at least six inches of earth. When the capacity of the site has been fully utilized, it is graded to suitable contours, covered by a minimum of two feet of earth, and vegetation established.

Two problems may result from the establishment of a landfill site. As the waste decomposes and rain water percolates through it, a contaminated liquid called leachate is produced, which may eventually reach surface or

underground waters if the site is in an unsuitable location and without proper controls. Also, as the waste decomposes, gases, principally methane, are produced which may migrate beyond the site if the site is not properly located and without proper controls. Methane gas is explosive when mixed with air in certain proportions and, if buildings have been constructed near the site, could migrate into basements with the potential for fire or explosion. This gas can be collected, however, and used to produce energy for various purposes. The Ministries of the Environment and Energy have funded a number of test installations to demonstrate techniques to achieve this with the dual purpose of preventing off-site migration of the gas and utilizing the energy produced, for example, for greenhouse heating.

Planning and Approval Processes

Planning

It is important to recognize that no individual element of the waste management system should be considered in isolation. To provide maximum benefit at minimum cost, the entire system must be taken into consideration, not only in relation to the controls which must be implemented to ensure against potential problems but also in the development of a waste management plan. The system as a whole must be assessed taking into consideration the various options available for transportation routes, number and location of transfer stations required, the potential for different types of material and energy recovery, and the number, type and location of waste processing facilities and final disposal sites.

Although planning for waste management is necessary for all those who may be involved including municipalities, government agencies and industries, the development of a long-term area waste management master plan must be, primarily, the responsibility of municipalities (apart from liquid and hazardous waste management) since a municipality is the only agency which has or can be provided with the authority to implement the plan.

Site Selection

The first stage in the implementation of an approved master plan is the selection and design of individual facilities or disposal sites. General areas for location will usually have been identified in the master plan, and it will then be necessary to examine and assess individual locations within each area on the basis of economics and potential social and environmental impacts. This detailed evaluation and design may be carried out by the municipality itself or by a waste management company.

During both the planning and the facility selection process, regular consultation should be held with all those who may be involved or affected. Contact with Ministry staff is essential to ensure that all technical aspects of the project meet the requirements of the legislation.

Application for Approval

Under the legislation, approval in the form of a Certificate of Approval must be obtained from the Ministry before any waste management facility including transfer stations, processing plants or disposal sites can be developed and operated. An application for approval must be accompanied by full documentation of all the matters considered in the site selection process. In addition, the detailed engineering design of the facility must be provided at this stage.

At present, applications for approval are considered under the Environmental Assessment Act if the proponent is a government agency or a municipality, and under the Environmental Protection Act if the proponent is a private company. In practice, the information which must be provided by the proponent to support his application will be similar in both cases, although the procedures and hearing requirements vary, as do the provisions for exemption from the need for a public hearing.

There is provision in the Environmental Assessment Act for class environmental assessment which is not available in the Environmental Protection Act. Approval in principle is provided for any individual facility falling within the class which has been approved. This can have application to a number of facilities of a similar type so that the time and cost of obtaining approval for an individual facility within the approved class are reduced.

Hearings

Hearings under both the Environmental Protection Act and the Environmental Assessment Act are held by the Environmental Assessment Board. In the case of Environmental Protection Act hearings, the Board makes recommendations to the Ministry as to whether or not the facility should be approved, and on conditions which should be attached to an approval. Under the Environmental Assessment Act, however, the Board makes decisions which must be implemented by the Ministry.

If the development of the facility also requires a hearing under other government legislation (for example, for approval of a zoning bylaw by the Ontario Municipal Board) the Consolidated Hearings Act provides for a single hearing by a joint board.

Appeals

If the Ministry refuses to issue a Certificate of Approval or issues a Certificate with conditions, under the Environmental Protection Act the proponent can appeal to another board, the Environmental Appeal Board. This Board can then hold a hearing reopening all the matters previously raised and either confirming, or changing the decision of the Ministry. Under the Environmental Assessment Act, a simplified appeal procedure to Cabinet is available, not only to the proponent but to any other party to the hearing. Even in cases where the Ministry merely follows the direction of the Board under the Environmental Assessment Act or the Consolidated Hearings Act, it is still legally possible for the proponent to appeal to the Environmental Appeal Board under the Environmental Protection Act.

Development, Operation, Closure & Post-Closure Of Facilities

Development

After approval for a facility has been obtained, work can proceed on construction, in the case of a transfer station or a waste processing plant, or on preparation, in the case of a landfill site, to the point where wastes can be received.

Operation

The operational period commences when delivery of waste begins and ends when waste delivery stops. During this period, the site must be operated in accordance with the legislative requirements and specifically in accordance with the proponent's proposals and conditions on the Certificate of Approval. These may require monitoring of contaminants by the operator (for example, by stack sampling in the case of an incinerator to check air quality, or by sampling of leachate under the site to determine the potential for water pollution in the case of a landfill site).

If problems are found through these monitoring activities or by Ministry staff inspections, the operator can be required under the legislation to take remedial measures, and if these are not taken the Certificate of Approval can be withdrawn and the site closed.

Closure

When the useful life of a site or facility ends, steps must be taken to close it safely. In the case of a transfer station or a waste processing facility this is a comparatively simple matter, requiring merely the removal of equipment and the demolition of the building or its adaptation for other purposes. When this has been completed, it is unlikely that there will be any continuing health or environmental risk.

This is not so for a landfill disposal site. In this case, closure will require, as already mentioned, covering of the entire site with earth and its contouring and vegetation. It may also require the installation of gas and leachate monitoring systems and in some cases systems to control, collect, treat and dispose of gas and/or leachate.

Post-Closure

In the case of most landfill sites, any potential problems are likely to become evident through monitoring within a few years after closure. The monitoring frequency can then be reduced or monitoring possibly discontinued. However, gas and leachate control systems, if installed, may have to be operated for at least 10 years and perhaps longer. Moreover, there is always the potential that problems may not become evident until many years after a site has been closed. This could result in difficulties in identifying the person responsible and ensuring that remedial measures are carried out.

Challenge of the 1980s

The Minister of the Environment, the Honourable Keith C. Norton, Q.C., has stated that waste management has emerged as the pre-eminent challenge of the 1980s. To meet this challenge requires a comprehensive review of waste management policy, legislation, procedures, guidelines, and standards for the environmentally acceptable handling, recycling and disposal of both liquid and solid wastes. While this is the responsibility of the Province of Ontario, waste and its problems are produced by municipalities, industries, and the public, and they must involve themselves in the solutions.

The proposed waste management policy for the 1980s will address the following objectives:

1. To ensure long-term advance planning for waste management, co-ordinated with other land-use planning, to provide adequate recycling, treatment and disposal facilities;

2. To ensure that informed input from members of the public is obtained at all planning and implementation stages;

3. To minimize the need for landfill disposal by promoting measures to reduce the quantity of waste produced and to recover and reuse waste materials;

4. To develop or amend waste management legislation, regulations and guidelines to provide authority for necessary measures, with flexibility to deal effectively with unforeseen problems;

5. To provide assurance of prompt remedial action and adequate compensation to third parties, if problems should arise;

6. To promote and carry out research to ensure that the best scientific knowledge is made available;

7. To ensure that this knowledge is updated regularly and applied promptly to resolve existing and potential future problems; and generally

8. To ensure that any waste, once disposed, does not, through interference or natural processes, damage the environment or put the public at risk.

Schedule of Appendices

1. WASTE MANAGEMENT CONSULTATION SESSION REPORT

2. WASTE REDUCTION, REUSE, RECYCLING AND RECOVERY REPORT

3. PERPETUAL CARE PROGRAM REPORT

4. INTERIM GUIDELINE FOR THE INTERPRETATION OF THE HAZARDOUS WASTE DEFINITION (REGULATION 309)

5. LEGISLATIVE IMPLICATIONS OF THE BLUEPRINT FOR WASTE MANAGEMENT

6. PROPOSED REVISIONS TO REGULATION 309

7. PROPOSED REVISIONS TO REGULATION 313

8. PROPOSED GENERATOR REGULATION

9. TERMS OF REFERENCE FOR A WASTE MANAGEMENT MASTER PLAN

10. SOLID WASTE MANAGEMENT COST ACCOUNTING SUMMARY REPORT

11. PROPOSED REGULATION UNDER THE ENVIRONMENTAL ASSESSMENT ACT REGARDING PRIVATE WASTE DISPOSAL SITES